BEFORE THE
POSTAL REGULATORY COMMISSION
WASHINGTON, D.C.   20268-0001

RATE ADJUSTMENT DUE TO EXTRAORDINARY OR EXCEPTIONAL CIRCUMSTANCES	Docket No. R2013-11

REPLY STATEMENT OF
THOMAS E. THRESS
ON BEHALF OF THE
UNITED STATES POSTAL SERVICE

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<u>AUTOBIOGRAPHICAL SKETCH</u>
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My name is Thomas E. Thress. I am a Vice-President at RCF Economic and Financial Consulting, Inc., where I have been employed since 1992. As a Vice President at RCF, I have major responsibilities in RCF's forecasting, econometric, and quantitative analysis activities.

I testified to the volume forecasts underlying the Postal Service's case in the last two omnibus rate cases prior to the enactment of the Postal Accountability and Enhancement Act (PAEA): Docket Nos. R2006-1 and R2005-1. Prior to this, I testified regarding the demand equations underlying the volume forecasts for all mail categories except for Priority and Express Mail in Docket Nos. R97-1, R2000-1, and R2001-1. I have also appeared as a rebuttal witness for the Postal Service in Docket No. MC95-1, and submitted written testimony for the Postal Service in Docket No. MC97-2.

I have had primary responsibility for the econometric analysis underlying Dr. George Tolley's volume forecasting testimony since Docket No. R94-1. In addition, I was responsible for the development of the share equation methodology used by the Postal Service since MC95-1, as well as the classification shift matrix construction used in Dr. Tolley's volume forecasting testimony in MC95-1 and MC96-2 to shift mail into the new categories proposed under classification reform.

I received a Master's Degree in Economics in 1992 from the University of Chicago. I received a B.A. in Economics and a B.S. in Mathematics from Valparaiso University in 1990.

1 **PURPOSE AND SCOPE OF STATEMENT**

2   The purpose of this Reply Statement is to respond to certain issues raised by

3 Intervenors in their Comments and supporting Statements in this case.

I. My Estimate of the Impact of the Great Recession Is More Reasonable Than Any Alternatives Presented in This Case

In their Statements filed last week, Mr. Lawrence Buc and Dr. Christian Lundblad both criticized my estimate of the mail volume lost to the Great Recession by calling my estimate "extraordinary" (Buc at page 4, line 10; Lundblad at page 3, line 19). I agree that the impact of the Great Recession on mail volumes was "extraordinary".

And, in fact, the Postal Regulatory Commission is also on record as explicitly finding that "[t]he Great Recession and its impact on the Postal Service constitute an extraordinary or exceptional circumstance" (Order No. 547 at p. 49, title to sub-section 4.).

A. The Rate of Diversion Implied by Dr. Lundblad's Estimated Impact of the Great Recession is Implausibly Large and is Obviously Capturing Macro-Economic Effects of the Great Recession

In his Statement, Dr. Lundblad makes his own estimate of the impact of the Great Recession on mail volumes based on what he calls a "substantial reinterpretation of the Postal Service demand equations." (Lundblad Statement at p. 38, lines 5-6) Dr. Lundblad's estimate of the impact of the Great Recession on mail volumes produces a "dramatically reduced estimate of the loss in mail volume and contribution due to the recession" (p. 38, ll. 3-4). Dr. Lundblad contends that the difference between these two estimates is "far more likely to be related to long-term trends towards electronic diversion than to the recession." (p. 38, ll. 7-8)

In response to POIR No. 6, question 1, I provided a set of volume graphs which compared actual mail volumes to what mail volumes could have been expected to be in the absence of the Great Recession. As I said as part of that response, "In the absence of the Great Recession, Market-Dominant Mail volume would have been expected to

1   grow at … the lowest growth rate for mail volume over any five-year period since at

2   least 1947." This is hardly an implausible outlook.

3   What does Dr. Lundblad believe the volume of market dominant mail would have

4   been in the absence of the Great Recession?   He does not present such a forecast

5   directly in his Statement. However, one can calculate what Dr. Lundblad's analysis

6   implies that the volume of market dominant mail would have been in the absence of the

7   Great Recession by adding his estimated recession impact to the actual volume of

8   market dominant mail.

9   Figure 1 compares actual market-dominant mail volume and my estimate of what

10   this volume would have been in the absence of the Great Recession with Dr. Lundblad's

11   implied estimate of what market-dominant mail volume would have been in the absence

12   of the Great Recession.

13   **Figure 1**
14   **Total Market-Dominant Mail Volume**

15

16
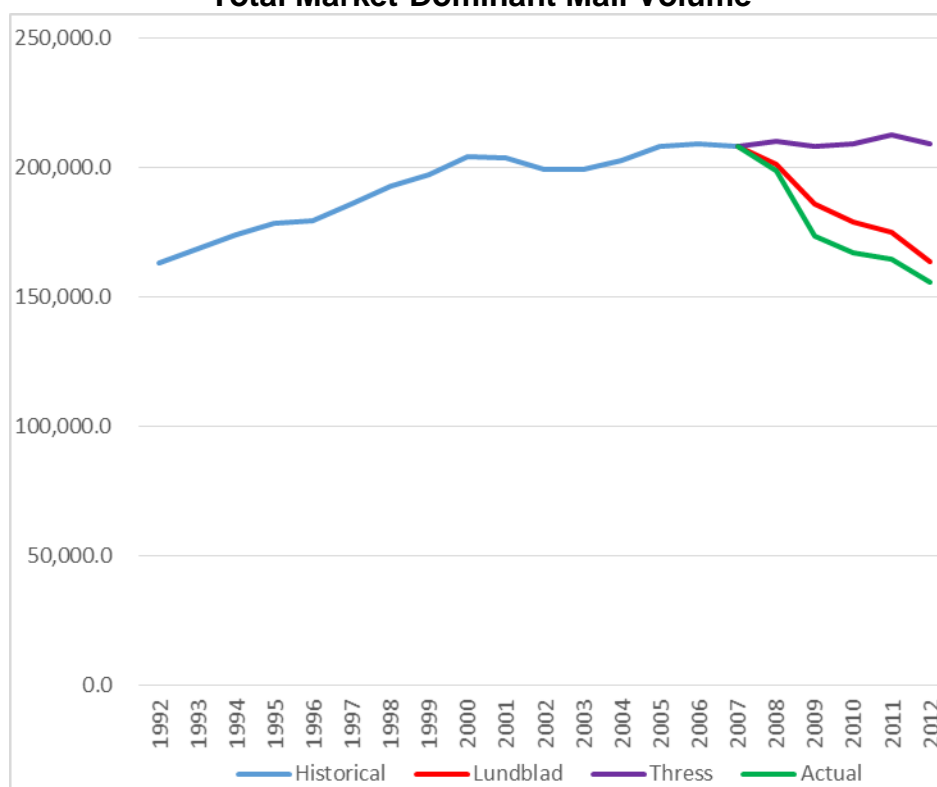
1   The blue line shows total market-dominant mail volume by year from FY 1992

2   through FY 2007. The green (bottom) line shows actual market-dominant mail volume

3   from FY 2008 through FY 2012. The red (middle) line is the volume that results from

4   subtracting Dr. Lundblad's estimate of the impact of the Great Recession from actual

5   mail volumes. That is, the red (middle) line here shows what Dr. Lundblad's analysis

6   implies that market-dominant mail volumes would have been in the absence of the

7   Great Recession. Dr. Lundblad's analysis implies that total market-dominant mail

8   volume would have declined 21.5 percent or by nearly 45 billion pieces from FY 2007 to

9   FY 2012 had there been no Great Recession.

10   The purple (top) line shows my estimate of what mail volume would have been in the

11   absence of the Great Recession. I project that market-dominant mail volume would

12   have been essentially unchanged from FY 2007 (208.3 billion pieces) to FY 2012 (209.3

13   billion pieces). As I noted above, this would have been the lowest growth rate in mail

14   volumes over any five-year period since at least 1947.

15   Dr. Lundblad does not appear to explicitly state what he believes would have caused

16   market-dominant mail volume to decline by 45 billion pieces in the absence of the Great

17   Recession. It is not even clear that he recognizes this as the inevitable implication of

18   his work. The only alternate hypothesis which Dr. Lundblad offers to explain these

19   massive volume declines is "the progression of electronic diversion, with the

20   revolutionary innovations in technology, and the rapidly growing acceptance of these

21   innovations by businesses and consumers, that have occurred during the past decade."

22   (p. 11, ll. 9 – 12).

23   In my models, I estimate that "the progression of electronic diversion" served to

24   reduce market-dominant mail volume by approximately 3.0 billion pieces from FY 2006

25   to FY 2007. Dr. Lundblad offers no criticism of this number. I estimate that "the

26   progression of electronic diversion" had a similar impact in FY 2008, reducing market-

1   dominant mail volume by 2.9 billion pieces in that year, with the Great Recession

2   reducing mail volume by an additional 11.1 billion pieces.

3   Dr. Lundblad, on the other hand, believes that the Great Recession only reduced

4   market-dominant mail volume by 2.3 billion pieces in FY 2008. This estimate of the

5   impact of the Great Recession by Dr. Lundblad implies that "the progression of

6   electronic diversion" must, therefore, have reduced market-dominant mail volume in FY

7   2008 by 11.6 billion pieces of mail (the 2.9 billion pieces that I estimate plus the

8   difference between our two estimates of the impact of the Great Recession, 11.1 billion

9   minus 2.3 billion equals 8.7 billion pieces).

10   In other words, Dr. Lundblad's analysis implies that the rate of electronic diversion of

11   market-dominant mail nearly quadrupled from FY 2007 to FY 2008. But as Dr.

12   Lundblad readily concedes, the so-called "revolutionary innovations in technology" that

13   Dr. Lundblad believes are driving this decline "have occurred during the past decade."

14   That encompasses not only 2008 but also 2007. Dr. Lundblad notes several

15   technological innovations that did not exist in 2007 – iPhones, Kindles, apps. What is

16   left mostly unsaid, however, is that these same technologies barely existed in 2008: in

17   fact, Dr. Lundblad himself notes, for example, that "the app store didn't open until July

18   2008."

19   Dr. James Clifton, in a Statement filed on behalf of the Greeting Card Association,

20   provides some data on smartphone sales (Table Six, page 25). According to Dr.

21   Clifton's table, there were a total of 12 million iPhones sold worldwide in 2008. How

22   plausible is it that 12 million iPhone users (not all of whom were even American)

23   diverted 11 billion pieces of mail?

24   Figure 2 shows the number of market-dominant mail pieces diverted to electronic

25   alternatives each year according to Dr. Lundblad's numbers.

Figure 2
Year-over-Year Diversion Implied by Dr. Lundblad's Analysis
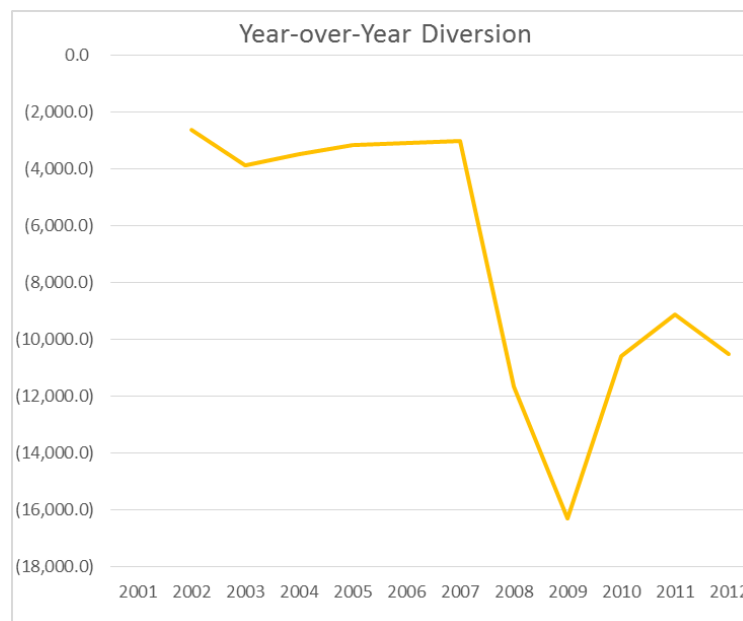
Year-over-year diversion of market-dominant mail is estimated to have held relatively steady at approximately 3 billion pieces per year through the first seven years of the 21st century. Based on Dr. Lundblad's analysis, diversion apparently surged to 11.6 billion pieces in FY 2008 and 16.3 billion pieces in FY 2009. Then, if one is to accept Dr. Lundblad's numbers, the rate of diversion declined substantially, settling into a range of 9 – 10.5 billion pieces of mail being diverted per year over the last three years which Dr. Lundblad considered. This is indeed an odd pattern for something that Dr. Lundblad describes as a "long-term trend in diversion."

If this graph looks somewhat familiar, it is because it looks remarkably similar to the graph of the Output Gap which I presented in my response to POIR No. 1, question 6.

1

Figure 3

Output Gap (Actual GDP / Potential GDP - 1)

2
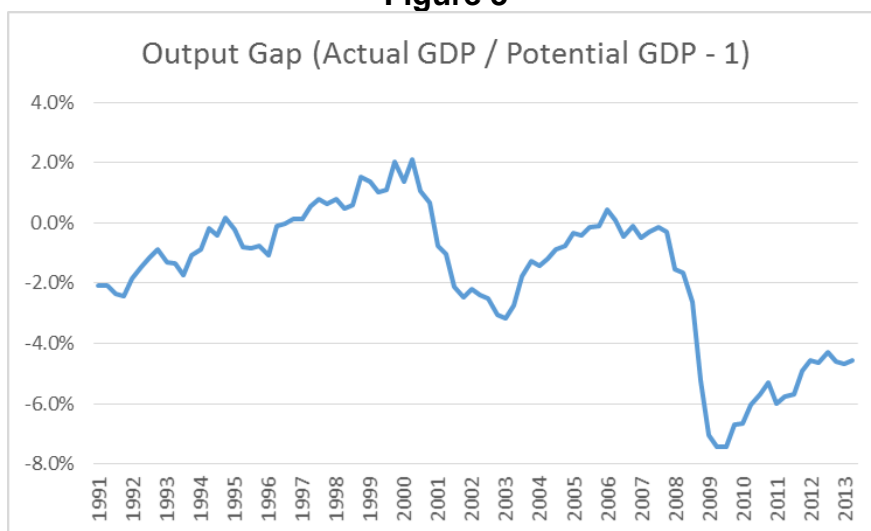
3   The simple correlation between Dr. Lundblad's implied estimate of mail diversion

4   and the Output Gap from 2003 through 2012 is 0.89! Looking at those graphs, I see

5   three possibilities: (i) the diversion of mail to electronic alternatives surged in FY 2008

6   for no reason identified by Dr. Lundblad or anybody else in this case at a time that just

7   happened to coincide with the largest macro-economic downturn in more than 70 years,

8   (ii) the Great Recession led to a surge in the diversion of mail to electronic alternatives –

9   in which case it is perfectly reasonable to attribute such diversion as being "due to" the

10   Great Recession, or (iii) Dr. Lundblad has mis-attributed a huge amount of volume that

11   was truly lost due to the Great Recession (e.g., transactions which disappeared) as

12   being lost instead to electronic diversion (e.g., transactions previously consummated by

13   mail now consummated electronically). I have no doubt that the main story here is the

14   third possibility – Dr. Lundblad has confused mail that disappeared with mail that

15   converted from hardcopy to electronic transmission. I do agree, however, that in

16   addition, there likely was some increase in diversion to electronic transmission that was

17   triggered by the upheavals of the Great Recession. But the dramatic changes that

18   occurred in the five years from 2007 to 2012 were anything but a continuation of a long-

19   term trend.

1   B. **The Great Recession Was Not a Mere "Business Cycle"**

2   Most of Dr. Lundblad's criticism of my estimate of the impact of the Great Recession

3   is premised on his view that the Great Recession can be viewed as a mere "business

4   cycle" (e.g., page 9, line 14; page 23, line 8; page 26, line 7). Dr. Lundblad expresses

5   his view perhaps most starkly at line 9 on page 26 of his Statement: "business cycles

6   are, *by definition*, cyclical phenomena that generate deviations around a lower

7   frequency trend."

8   But, on the contrary, the Great Recession was **not** a mere business cycle, which is

9   one of the key ways in which the Great Recession was "extraordinary and exceptional"

10   (Order No. 547).

11   I do not use the term "business cycle" anywhere in my Statement, and, in fact, I

12   explicitly show one key way in which the Great Recession differed from previous

13   recessions was in its effect on "mail volume trends":

14

15   "In previous recessions, mail volume trends were essentially the same after the
16   recession as before. For example, in the two Fiscal Years prior to the 2001
17   recession (FY 1999, FY 2000), Standard Mail volume grew at an average annual
18   rate of 4.8 percent. In the first two Fiscal Years following the end of the 2001
19   recession (FY 2003, FY 2004), Standard Mail volume grew at an average annual
20   rate of 4.7 percent.

21   Unlike after the 2001 recession, however, where Standard Mail volume returned
22   to pre-recession growth rates, Standard Mail volume has had only one year of
23   meaningful growth since the declared end of the Great Recession (FY 2011,
24   when Standard Mail volume grew 2.6 percent) and Standard Mail volume in FY
25   2012 was 3.3 percent below its level two years earlier. The story is similar for
26   First-Class Mail. From FY 2004 to FY 2006, First-Class Mail volume declined,
27   but at a fairly modest average annual rate of only 0.3 percent. From FY 2010 to
28   FY 2012, while employment grew (albeit somewhat slowly), First-Class Mail
29   volume declined at an average annual rate of 5.8 percent." (Thress Statement, p.
30   7, ll. 1 – 13)

31

32   Not only does Dr. Lundblad seem to miss completely the unique aspects of the

33   Great Recession that distinguish it from typical "business cycles", but his entire analysis

1   is premised on an assumption that the impact of the Great Recession on mail volumes

2   was entirely consistent with "the nature of mail volume growth in the years leading up to

3   and after a recession." He provides a table which "shows the two-year mail volume

4   change before and after earlier recessions" and claims that it shows "that the effect

5   USPS is postulating to have occurred after the 2007-2009 recession is inconsistent with

6   how recessions behave." (Lundblad at page 9)

7   Dr. Lundblad's Table 2 is reproduced below. I have added a final row which shows

8   the same figures for "the 2007-2009 recession".

9

10   **Table 1**

11   **Market-Dominant Mail Volume Growth Before and After Recessions**

Recession	Before	After
Nov 1973 – Mar 1975	3.8%	+9.2%
Jan 1980 – Nov 1982	9.8%	+12.1%
Jul 1990 – Mar 1991	7.5%	+6.8%
Mar 2001 – Nov 2002	6.0%	+3.3%
Dec 2007 – Jun 2009	*0.0%*	*-6.8%*

12

13   The numbers in the last row are not being "postulat[ed]" by the Postal Service; those

14   numbers actually happened. The effect of the Great Recession on mail volume was

15   "inconsistent with how recessions behave." The Commission has granted this point: a

16   point which is obvious to anybody who has followed the financial plight of the Postal

17   Service over the past five years. But this is because the Great Recession has behaved

18   "inconsistently with how recessions behave": a point that virtually any American adult

19   would readily concede.

20   Something of a variation on Dr. Lundblad's Table 2 is presented below which

21   replaces mail volumes with real advertising expenditures. The numbers here are the

22   percentage change in real advertising expenditures from two years before the recession

23   in question to the third full year after the end of the recession.

1 **Table 2**
2 **Change in Real Advertising Expenditures**

Recession	Years being compared	% Change
Aug 1929 – Mar 1933	1927 – 1935[1]	-23.0%
Nov 1973 – Mar 1975	1971 – 1978	+30.0%
Jan 1980 – Nov 1982	1978 – 1985	+32.7%
Jul 1990 – Mar 1991	1988 – 1994	+2.9%
Mar 2001 – Nov 2002	1999 – 2005	+4.0%
Dec 2007 – Jun 2009	2005 – 2012	-23.5%

3 Sources: Robert Coen, Magna Global, and Pivotal Research

4

5 In addition to the four recessions shown by Dr. Lundblad, this table shows the Great

6 Recession and also adds one earlier recession: the Great Depression. To what should

7 be the shock of nobody, the Great Recession appears to be much more similar in scope

8 to the Great Depression than to lesser, more recent recessions that were so relatively

9 insignificant that they did not even warrant getting their own names.

10 Dr. Lundblad repeats the same error on page 9 of his statement when he criticizes

11 my use of time trends "to explain short-term business cycle effects." I am not using time

12 trends to explain "short-term business cycle effects". I model the impact of the Great

13 Recession, in part, using time trends because the impact of the Great Recession on

14 mail volumes (and many other things) is neither "short-term" nor is it a "cycle". As I

15 have repeatedly explained, one impact of the Great Recession was to change long-run

16 trends in mail volumes. See, for example, my response to POIR No. 1, question 9,

17 where I identify a change in the trend in the number of loan accounts held by U.S.

18 consumers (and the mail volume associated with them) of 2.3 percent from before the

19 Great Recession (+1.8 percent) to the period since the official end of the Great

20 Recession (-0.5 percent).

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[1] Mr. Coen did not report advertising expenditures for 1936, only 1935.

1 **C. The Postal Service is Not the Only Entity Still Feeling the Effects of the**
2 **Great Recession**
3

4   Dr. Lundblad and several other intervenors criticize my estimate of the impact of the

5 Great Recession on mail volume by noting, for example, that "inflation-adjusted GDP

6 was higher in FY 2012 than it was in FY 2007." (Lundblad at page 17) This assertion

7 proves nothing. As I explained in my Statement, "The U.S. macro-economy does not,

8 however, move purely in unison. Weaknesses in one sector may gradually expand to

9 other sectors until they reach enough of the economy to be identifiable as a full-blown

10 recession. Likewise, some sectors of the economy may be quicker to recover from

11 recession than others, so that some sectors of the economy may effectively remain in

12 recession even after the macro-economy in general has moved into recovery." None of

13 that should be the least bit controversial.

14   Consider, for example, the 2001 recession. The NBER officially dates this recession

15 as having started in March, 2001, and ended in December, 2001. During this recession,

16 real GDP declined in two of the first three quarters of 2001 (2001Q1, 2001Q3) before

17 growing. The unemployment rate, however, did not reach its peak until June, 2003.

18   The next table identifies the Postal quarter between 2000Q1 and 2005Q4 with the

19 lowest volume growth or largest volume decline over SPLY (same period last year) for

20 various mail categories.

21   **Table 3**

Mail Category	Lowest Qtrly SPLY, 2000Q1 – 2005Q4
First-Class Single-Piece	2003PQ3
First-Class Workshared	2003PQ2
Standard Commercial	2002PQ2
Standard Bulk Nonprofit	2002PQ1
Periodicals	2002PQ2
Bound Printed Matter	2002PQ3
Media and Library Rate Mail	2001PQ2

22

1   The fact that mail volumes do not track with GDP in no way indicates that mail

2   volumes are not being affected by macro-economic factors.

3   The dependent variable in my econometric models is the natural logarithm of mail

4   volume **per adult** per day. I deflate mail volume by population before estimating my

5   equations primarily because doing so improves the econometric fit of my demand

6   equations. But thinking about mail volume divided by population is also significant

7   because, as population grows, the number of Postal delivery points also grows. Mail

8   volume per adult (or per household) more closely tracks mail volume per delivery point

9   than does total mail volume and, hence, per-capita volume trends probably more closely

10   correlate to the Postal Service's financial position.

11   Logically, the macro-economic counterpart of per-capita (or per adult or per

12   household) mail volume trends are per-capita macro-economic trends.

13   Real per-capita GDP peaked in 2008PQ1 at $49,438. In 2012PQ4, real per-capita

14   GDP was $49,256, less than in 2008PQ1. So right away, we see that the macro-

15   economy had **<u>not</u>**, in fact, "recovered" by the end of FY 2012 on a per-capita basis.

16   Moreover, as I explained in several POIR responses (e.g., POIR No. 1, question 6), "the

17   measure of the extent to which the Great Recession harmed the macro-economy and

18   mail volume is not the extent to which the macro-economy or mail volume fall below

19   historical highs but the extent to which they fall below the level they could have been

20   expected to reach in the absence of the Great Recession". In the 15 years preceding

21   the Great Recession, for example, from 1992PQ4 through 2007PQ4, real per-capita

22   GDP grew at an average annual rate of 2.1 percent. Real per-capita GDP in 2012PQ4

23   ($49,256) was more than 10 percent below where it would have been had it grown at its

24   historical rate (2.1 percent) over the past five years ($54,812).

25   While GDP may be the most all-encompassing measure of macro-economic activity,

26   it is not the only such measure. As I have previously stated (e.g., response to POIR No.

1 9, question 1), real median household income declined year-over-year for five

2 consecutive years from 2008 through 2012 by a total of more than 8 percent.

3 Nor is GDP the best measure in understanding expected macro-economic impacts

4 on mail volume. Based on two decades of research on my part, the two macro-

5 economic variables which best track with mail volumes are private employment (which

6 tracks most strongly with First-Class Mail) and real gross private domestic investment

7 (which tracks most strongly with Standard Mail).

8 Private employment per adult (the independent variable used in my econometric

9 work) peaked pre-recession in 2007PQ2, did not begin to consistently grow again until

10 2011PQ1, and remained 8.5 percent below its pre-recession high in 2012PQ4.

11 Moreover, employment has remained particularly weak in the mail-intensive

12 industries which were hardest hit by the Great Recession. Total private employment

13 (overall, not per adult) in December, 2012, was 2.5 percent below its December, 2007

14 level. Total employment in financial activities was down 5.4 percent from December,

15 2007, to December, 2012. Total employment in real estate was down 9.0 percent over

16 the same time period. Total employment in advertising and related services was down

17 8.6 percent.

18 Real gross private domestic investment per adult peaked pre-recession in 2006PQ2,

19 did not begin to consistently grow again until 2011PQ3, and remained 20.9 percent

20 below its pre-recession high in 2012PQ4.

21 The notion that "total GDP is back where it started, everything must be back to

22 normal" is naïve and uninformed.

D. Dr. Lundblad's Estimated Impact of the Great Recession Makes Even Less Sense When Looking at Individual Mail Categories

As I showed earlier in section I.A. of this Reply Statement, Dr. Lundblad's estimate of the impact of the Great Recession on mail volumes is implausible. Section I.A. looked at total market-dominant mail. In fact, the patent deficiencies in Dr. Lundblad's estimate of the impact of the Great Recession on mail volumes are even more obvious when one looks at specific mail categories.

1. First-Class Single-Piece Mail

Dr. Lundblad's flawed insistence that the Great Recession was a mere business cycle which, therefore, could not possibly have had any impact on mail volume trends leads him to exclude the trend component of employment as well as the recent net mail diversion trend from his calculation of the impact of the Great Recession on First-Class Single-Piece mail volume. The result of this produces what might well be the most obvious and egregious flaw in Dr. Lundblad's analysis. He concludes that the Great Recession had **no impact at all** on First-Class Single-Piece Mail volume. Note, he does not conclude that recent positive growth in employment has offset the negative cyclical effect of the Great Recession on First-Class Single-Piece Mail volume. No, he concludes that the impact of the Great Recession on First-Class Single-Piece Mail volume was exactly zero in each and every year since FY 2008.

Figure 4 compares actual First-Class Single-Piece Mail volume and my estimate of what this volume would have been in the absence of the Great Recession with Dr. Lundblad's implied estimate of what First-Class Single-Piece Mail volume would have been in the absence of the Great Recession.

Figure 4
First-Class Single-Piece Mail Volume
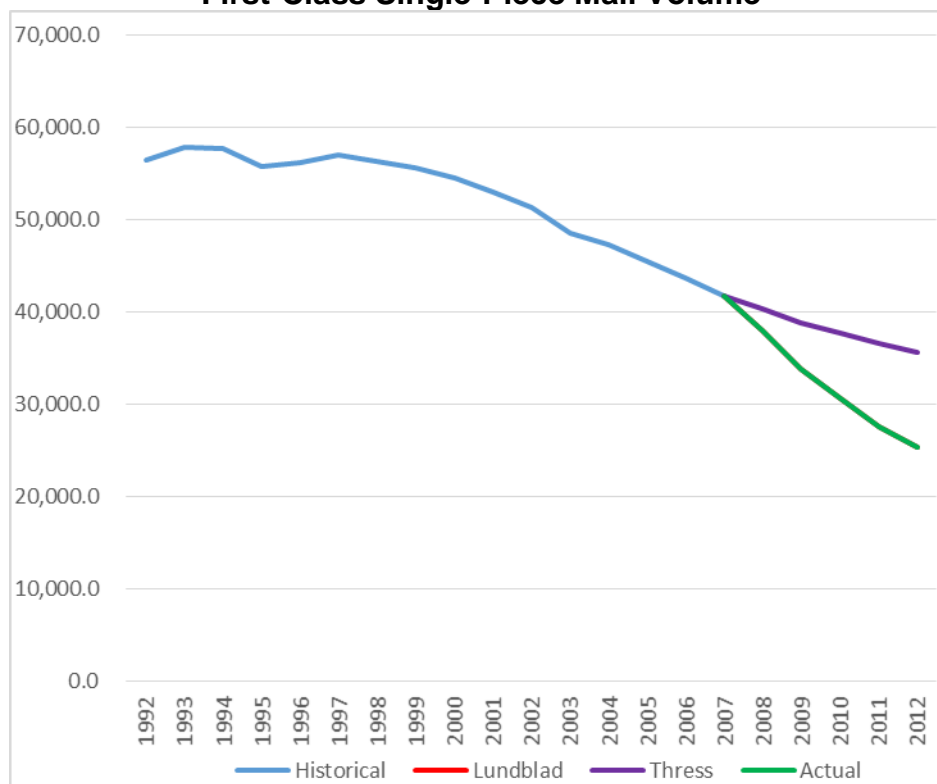
 5   The blue line shows First-Class Single-Piece Mail volume by year from FY 1992

 6   through FY 2007. The green (bottom) line shows actual First-Class Single-Piece Mail

 7   volume from FY 2008 through FY 2012. The red (middle) line shows what Dr.

 8   Lundblad's analysis implies that First-Class Single-Piece Mail volumes would have been

 9   in the absence of the Great Recession. The purple (top) line shows my estimate of

10   what First-Class Single-Piece Mail volume would have been in the absence of the Great

11   Recession.

12   Note that no red line appears in the above graph. This is because Dr. Lundblad's

13   estimate of First-Class Single-Piece Mail volume in the absence of the Great Recession

14   is the same as actual First-Class Single-Piece Mail volume in the presence of the Great

15   Recession. To emphasize, Dr. Lundblad believes that the biggest economic decline in

16   75 years had absolutely no impact on First-Class Single-Piece Mail volume.

1   Figure 5 shows the number of First-Class Single-Piece Mail pieces diverted to

2   electronic alternatives each year implied by Dr. Lundblad's numbers.

3

4   **Figure 5**
5   **Year-over-Year Diversion Implied by Dr. Lundblad's Analysis**
6   **First-Class Single-Piece Mail**

7

8
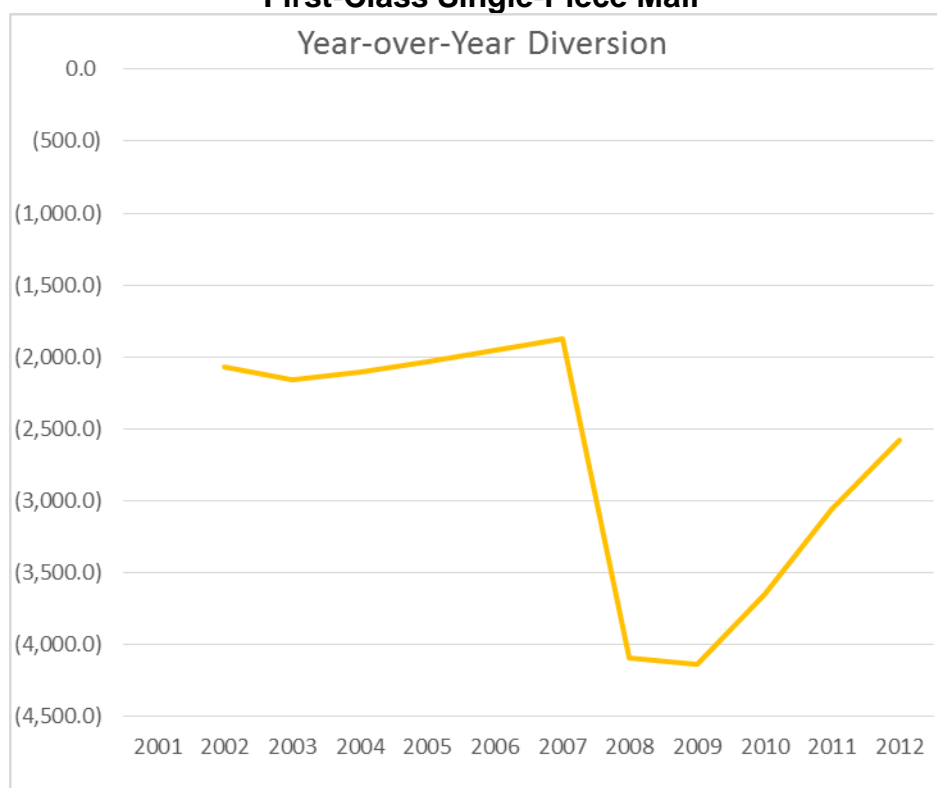
9   This graph closely mirrors the parallel graph for total market-dominant mail that I

10   presented in section I.A. above. Dr. Lundblad's analysis implies that the rate of

11   electronic diversion of First-Class Single-Piece Mail doubled during the two years of the

12   Great Recession before lessening more recently.

13   Again, this graph seems to be clearly capturing something related to the macro-

14   economy. For example, the simple correlation between the above numbers and

15   changes in private employment is 0.77.

1   **2. First-Class Workshared Mail**

2   Figure 6 compares actual First-Class Workshared Mail volume and my estimate of

3   what this volume would have been in the absence of the Great Recession with Dr.

4   Lundblad's implied estimate of what First-Class Workshared Mail volume would have

5   been in the absence of the Great Recession.

6   The blue line shows First-Class Workshared Mail volume by year from FY 1992

7   through FY 2007. The green (bottom) line shows actual First-Class Workshared Mail

8   volume from FY 2008 through FY 2012. The red (middle) line shows what Dr.

9   Lundblad's analysis implies that First-Class Workshared Mail volumes would have been

10   in the absence of the Great Recession. The purple (top) line shows my estimate of

11   what First-Class Workshared Mail volume would have been in the absence of the Great

12   Recession.

13   Dr. Lundblad's analysis implies that First-Class Workshared Mail volume, which had

14   previously only declined following the 2001 recession, would have begun a continual

15   decline, coincidentally starting in the same year as the Great Recession, even absent

16   the Great Recession.

1

Figure 6
First-Class Workshared Mail Volume

Figure 7 shows the number of First-Class Workshared Mail pieces diverted to electronic alternatives each year implied by Dr. Lundblad's numbers.

1 **Figure 7**
2 **Year-over-Year Diversion Implied by Dr. Lundblad's Analysis**
3 **First-Class Workshared Mail**

4

5
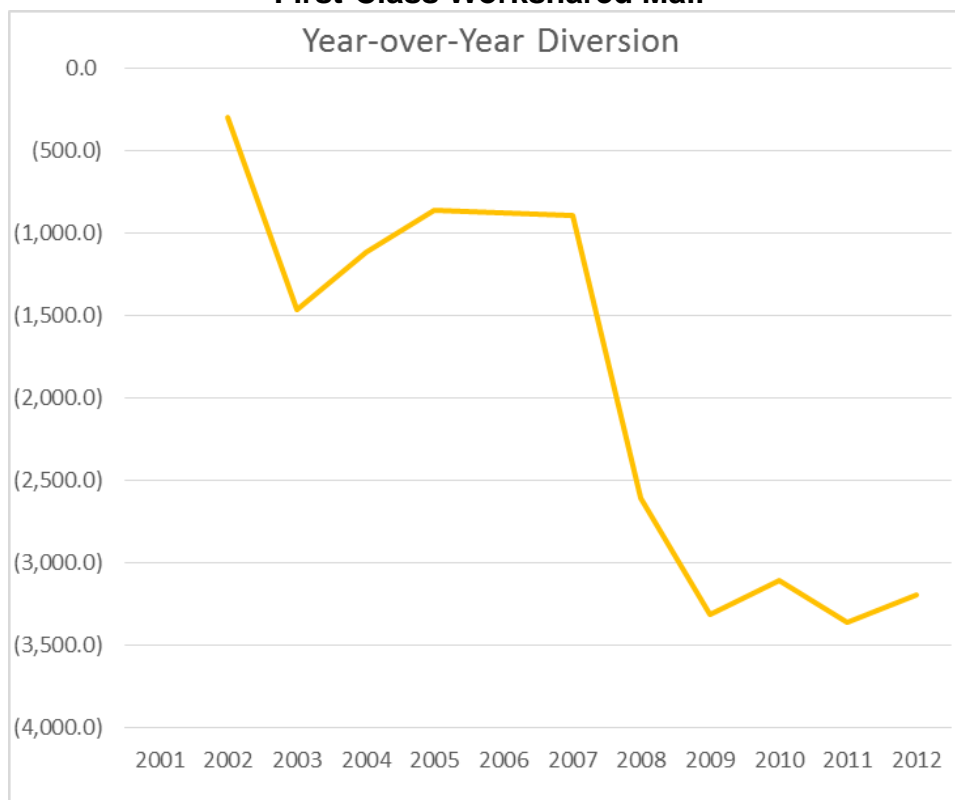
6   Figure 7 is perhaps less obviously a macro-economic effect masquerading as

7 "diversion", although the rate of diversion nearly quadruples from FY 2007 to FY 2009.

8 The implied diversion rate remains at this high level, however, in this instance. Still, the

9 data here are consistent with some measures of the wider economy which I have

10 identified in some of my responses to POIRs. For example, the simple correlation

11 between the above numbers and the changes in the number of loan accounts (see my

12 response to POIR No. 1, question 9) is 0.65. The simple correlation between these

13 numbers and changes in the number of mortgage accounts (same source) is 0.93.

1 **3. Standard Mail**

2 Figure 8 compares actual Standard Mail volume and my estimate of what this

3 volume would have been in the absence of the Great Recession with Dr. Lundblad's

4 implied estimate of what Standard Mail volume would have been in the absence of the

5 Great Recession.

6 The blue line shows Standard Mail volume by year from FY 1992 through FY 2007.

7 The green (bottom) line shows actual Standard Mail volume from FY 2008 through FY

8 2012. The red (middle) line shows what Dr. Lundblad's analysis implies that Standard

9 Mail volumes would have been in the absence of the Great Recession. The purple (top)

10 line shows my estimate of what Standard Mail volume would have been in the absence

11 of the Great Recession.
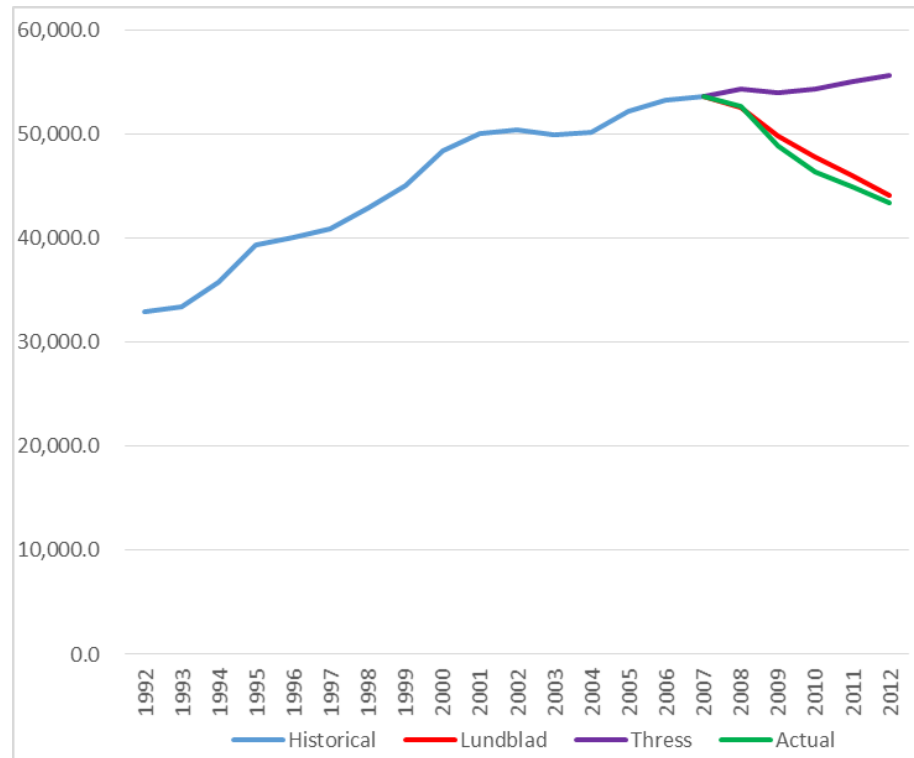
12 **Figure 8**
13 **Standard Mail Volume**

14

15 Figure 9 shows the number of Standard Mail pieces diverted to electronic

16 alternatives each year implied by Dr. Lundblad's numbers.

1 **Figure 9**
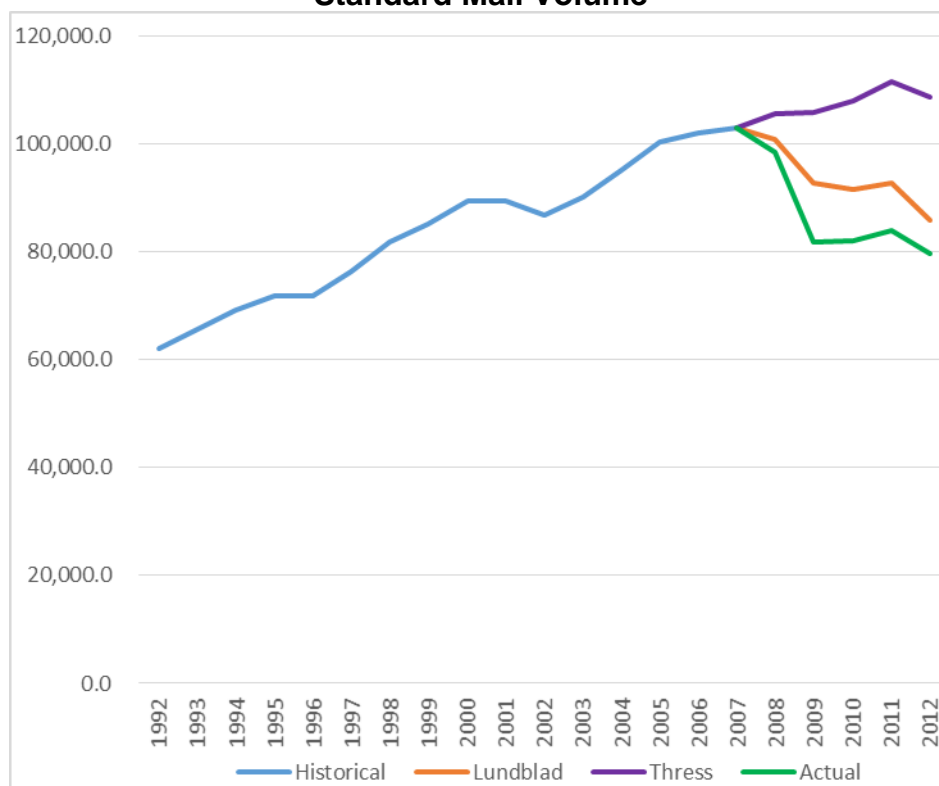2 **Year-over-Year Diversion Implied by Dr. Lundblad's Analysis**
3 **Standard Mail**

4
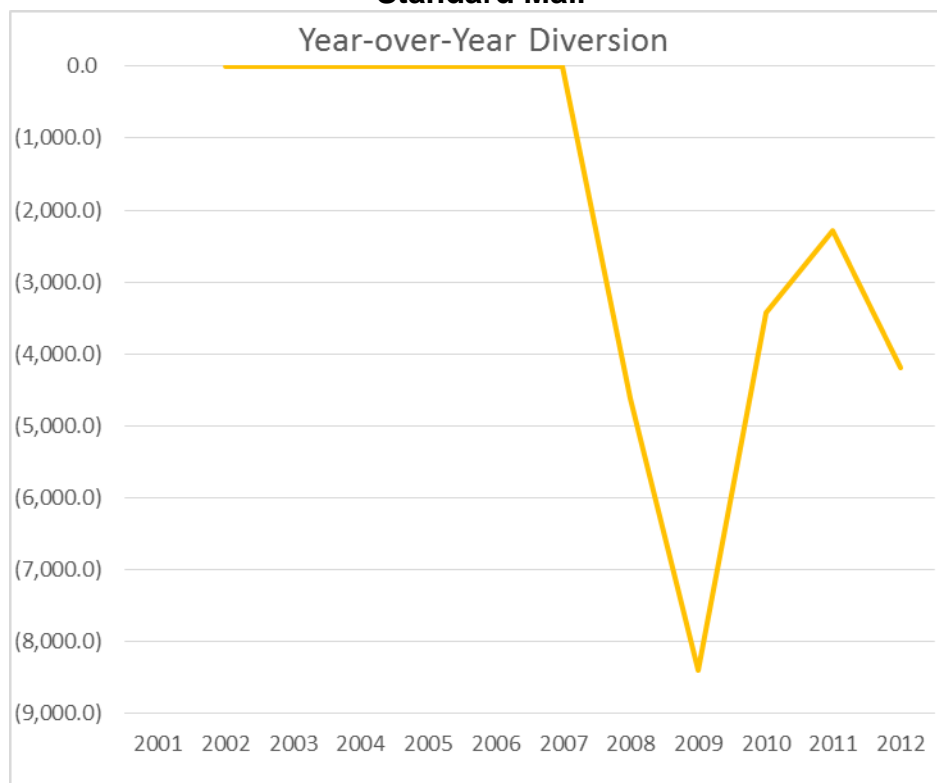
5   According to Dr. Lundblad, in 2007, Internet advertising expenditures totaled $21.2

6 billion (Lundblad Statement, Figure 5 at page 19, underlying data are in the

7 spreadsheet, "MPA et al.-LR-R2013-11-2.xlsx", sheet "Internet Ad Revenue"). As I

8 explained in my response to POIR No. 1, question 4(d), "to the extent that Internet

9 advertising expenditures may have diverted some Standard Mail volume, this diversion

10 will be incorporated into the coefficients on the long-run linear trend variables in the four

11 Standard Mail equations presented by me in this case, and, in the aggregate, was

12 clearly overwhelmed by offsetting positive influences on Standard Mail volume."

13   From FY 2007 to FY 2008, Standard Mail volume declined by 4.4 billion pieces (4.3

14 percent). Dr. Lundblad attributes only half of this decline (2.3 billion pieces) to the Great

15 Recession. In fact, the other factors in the Standard Mail models – on which Dr.

16 Lundblad made no comments – were such that Standard Mail volume should have been

1 expected to increase by 2.6 billion pieces from FY 2007 to FY 2008. This leaves Dr.

2 Lundblad with 4.6 billion lost pieces of Standard Mail to explain by some factor other

3 than the Great Recession.

4   He speculates that the decline in Standard Mail volume that year could have been

5 because "growth in market share of advertising over the Internet caused the Postal

6 Service's direct mail market share to drop substantially." (Lundblad at page 19) From

7 2007 to 2008, Internet advertising expenditures increased from $21.2 billion to $23.4

8 billion, an increase of $2.2 billion (Lundblad Statement, Figure 5 at page 19, underlying

9 data are in the spreadsheet, "MPA et al.-LR-R2013-11-2.xlsx", sheet "Internet Ad

10 Revenue"). Dr. Lundblad's apparent hypothesis is that the first $21.2 billion in Internet

11 advertising expenditures had no measurable effect on Standard Mail volumes, but those

12 next $2 billion suddenly led to a decline in Standard Mail volume.

13   But FY 2008 is not the dagger in Dr. Lundblad's theory. The FY 2008 numbers are

14 merely unlikely. The FY 2009 numbers seem preposterous. In FY 2009, Standard Mail

15 volume declined by 16.6 billion pieces. Dr. Lundblad attributes 10.9 billion pieces of lost

16 Standard Mail volume to the Great Recession, while I estimate that mail volume was

17 reduced by 23.9 billion pieces in FY 2009 because of the Great Recession.

18   Compared to my model, then, Dr. Lundblad appears to be suggesting that Standard

19 Mail volume was reduced by an additional 13.0 billion pieces in FY 2009 because of the

20 growth in Internet advertising expenditures, or an additional 8.4 billion pieces more than

21 in FY 2008.

22   There's only one problem with Dr. Lundblad's theory: Internet advertising

23 expenditures declined in 2009 from $23.4 billion to $22.7 billion (Lundblad Statement,

24 Figure 5 at page 19, underlying data are in the spreadsheet, "MPA et al.-LR-R2013-11-

25 2.xlsx", sheet "Internet Ad Revenue"). A change in Internet advertising expenditures of

26 −$0.8 billion somehow caused a change in Standard Mail volume of +8.4 billion pieces?

27 That result highly implausible.

a. Total Advertising Expenditures

In addition to Dr. Lundblad, the MPA, et al., also sponsor a statement by Jon Swallen, Chief Research Officer of Kantar Media, who challenges the advertising expenditures data that I presented in response to several POIRs (e.g., POIR No. 1, question 4) and which was provided to the Commission in response to POIR No. 7, question 1.

For many years, through at least Docket No. R94-1, the econometric demand equations for third-class mail which were relied upon by the Postal Service in omnibus rate cases and elsewhere included advertising expenditures as an explanatory variable. These data came from Robert J. Coen of McCann-Erickson. Mr. Coen began compiling advertising data for McCann-Erickson in 1948. Mr. Coen was also the source for advertising expenditures data for *Advertising Age*, "the leading global source of news, intelligence and conversation for marketing and media communities." The website economicsofadvertising.com says this about Mr. Coen's work: "Most academic studies of advertising expenditures have relied on a data set compiled by Robert J. Coen…. Coen's data have been republished in the U.S. Census Bureau's Historical Statistics of the United States, Colonial Times to 1970 as well as by the Television Advertising Bureau."

The media department of McCann-Erickson, where Mr. Coen worked was branded as Universal McCann (later UM) around 2000. In 2001, Magna Global was created with Universal McCann underneath it by 2005. Brian Weiser worked with Mr. Coen at Magna Global beginning in 2003 with Mr. Weiser replacing Mr. Coen as the principal source of advertising expenditures data by 2009.

Mr. Weiser's advertising data are, hence, the natural successor of Mr. Coen's decades of work. The advertising expenditures data used by the Postal Service and me come from Mr. Coen through 2008 and through his successor, Mr. Weiser, since then.

1 With Mr. Weiser's move from Magna Global to Pivotal Research Group in 2011, our

2 source of data has likewise moved.

3   The advertising expenditures data on which I have relied in this case have been

4 consistently maintained for more than 60 years and have been relied upon by numerous

5 academic and government researchers throughout that time period, including the Postal

6 Rate Commission.

7   One further note in support of the data which I have used in this case vis-à-vis those

8 presented by Mr. Swallen. As Mr. Swallen himself notes, his company, Kantar Media,

9 excludes direct mail advertising expenditures from their calculation of total advertising

10 expenditures (Swallen Statement at page 3). Since the interest of the Postal Service is

11 most directly on direct-mail advertising, of course, the use of advertising data which

12 includes direct mail is obviously preferable for my work.

13   **4. First-Class International Mail and Package Services**

14   Figure 10 combines First-Class International Mail and Package Services (Bound

15 Printed Matter, Media Mail, and Library Rate) volumes. Very little attention has been

16 given in this case to First-Class International Mail and Package Services. This is not

17 terribly surprising, since more than 96 percent of the market-dominant mail volume loss

18 attributed to the Great Recession in my Statement was lost domestic First-Class and

19 Standard Mail volume. Nevertheless, Dr. Lundblad's estimated impact of the Great

20 Recession on these mail volumes warrants at least some attention, if only to point out

21 how utterly implausible these estimates are.

22   As in the previous graphs, the blue line is historical mail volume through FY 2007,

23 the green line is actual mail volume from FY 2008 through FY 2012, the red line is what

24 Dr. Lundblad's analysis implies that this mail volume would have been, and the purple

25 line shows my estimate of what this mail volume would have been in the absence of the

26 Great Recession. Unlike on the preceding graphs, however, Dr. Lundblad's implied

1   estimate of mail volume in the absence of the Great Recession (the red line) is not the

2   middle line, it is the bottom line.

3

4   **Figure 10**
5   **First-Class International and Package Services Volumes**

6

7
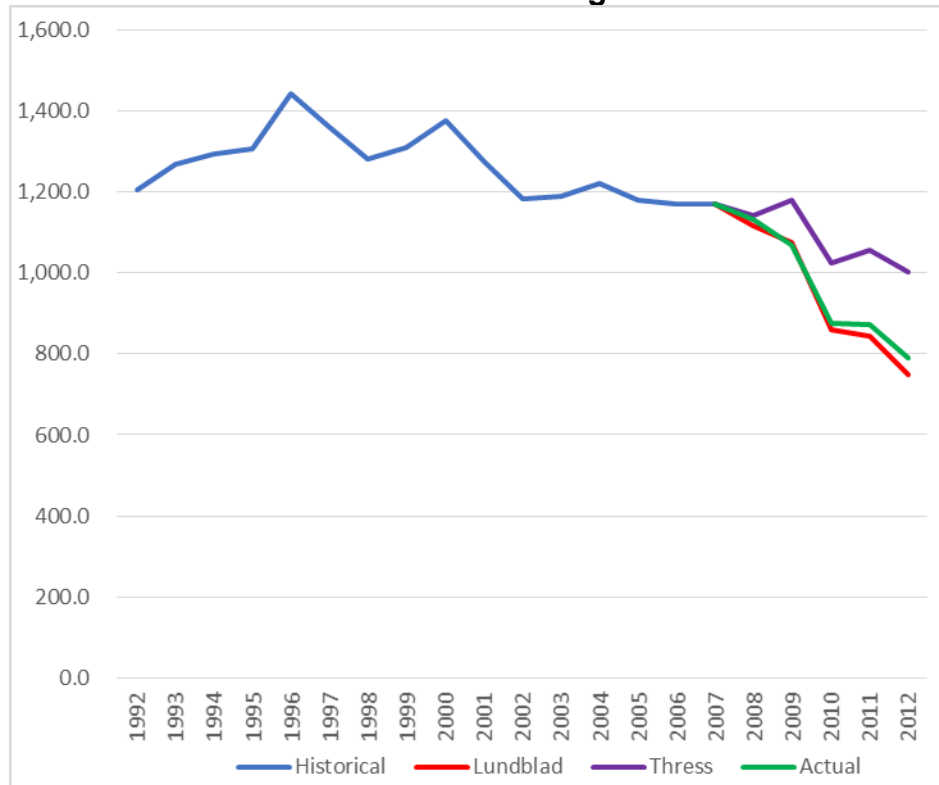
8   Dr. Lundblad estimates that the impact of the Great Recession on First-Class

9   International Mail volume was to **increase** that volume by 17.5 million pieces. From FY

10   2007 to FY 2012, First-Class International mail volume declined by almost 40 percent.

11   Incredibly, the implication of Dr. Lundblad's analysis is that the global financial crisis

12   was actually a good thing for First-Class International Mail.

13   His results for domestic Package Services (Bound Printed Matter, Media Mail, and

14   Library Rate Mail) are at least as absurd. He estimates that the impact of the Great

15   Recession on these mail categories was to *increase* mail volume by a combined 23

16   million pieces. How is such a thing possible? In the absence of the Great Recession,

1   Dr. Lundblad's analysis implies that these mail volumes would have declined by a

2   combined 32.3 percent from FY 2007 to FY 2012. I estimate that, in the absence of the

3   Great Recession, these mail volumes would have declined by a combined 5.7 percent.

4   Keep in mind that the combined volume in these categories increased in each of the five

5   years immediately preceding the Great Recession.

6   Why might these volumes have been expected to sharply change the direction of

7   their trend, from modest growth to deep decline, in the absence of the Great

8   Recession? Dr. Lundblad offers no insight.

9   As I stated in my response to POIR No. 1, question 6, "The Great Recession was an

10   unquestionably negative influence on mail volume. As such, it would make no sense to

11   attribute positive effects to the Great Recession." I stand by this statement. The idea

12   that the Great Recession had a positive impact on the volume of any type of mail is, for

13   lack of a better word, bizarre.

14   **E. The Rate of Diversion Implied by Dr. Lundblad's Estimated Impact of the**
15   **Great Recession Is Not Consistent With the Technological Changes**
16   **Identified by Dr. Lundblad and Others as the Source of This Diversion**
17

18   Among those Intervenors who are critical of my estimate of the impact of the Great

19   Recession on mail volumes, the prevailing alternate hypothesis is that this mail was not

20   lost to the Great Recession but was, instead, lost to the Internet and other electronic

21   alternatives to the mail.

22

23   "The Postal Service's analysis of Mr. Thress's trend variables ignores the
24   substantial technical innovation during the past decade that surely accelerated
25   the electronic diversion of mail volume and would have done so in the absence of
26   the recession." (Lundblad, section heading at p. 11)

27   "USPS witness Thress' assumptions are counterintuitive, anomalous in
28   comparison with other macroeconomic indicators, and inconsistent with the
29   experience of high-volume commercial mailers. A theory consistent with other
30   macroeconomic indicators as well as with mailer experiences is that other

1   factors, notably the trend toward increasing electronic diversion, contributed
2   significantly to mail volume losses." (FSR and NAMIC, p. 11)

3   "[T]here is also no doubt that mail volumes for these two categories of mail are
4   below what they were before the recession began, largely due to electronic
5   diversion. But the economy has been in recovery since July of 2009. Further, our
6   surveys and interviews provide no support for the proposition that the recession
7   in and of itself caused increased diversion. In fact, they point to just the opposite
8   conclusion: increased diversion was independent of the recession. As one
9   interviewee phrased it, 'Whether the recession was there or not, our company
10   would have been going down the path of electronic anyway.' Another interviewee
11   expressed a parallel thought, 'Adoption of [the] digital age occurred more so after
12   the recession, not due to the recession; rather when the clients became more
13   interested in alternative/readily available information and ability to complete
14   transactions at their finger tips.'" (Buc, p. 4)

15

16   I have discussed the subject of electronic diversion at length in this proceeding.

17   See, for example, my responses to POIR No. 2, questions 5 and 6; POIR No. 3,

18   questions 1 and 2; POIR No. 4, questions 2, 6, and 7; POIR No. 6, questions 12, 13,

19   and 25; and POIR No. 9, question 7.

20   In evaluating the potential impact of specific technological innovations on mail

21   volume, there are three important considerations that one needs to take into account.

22   First, as I discussed in my response to POIR No. 9, question 7, it is important to

23   understand that we are not interested in Internet usage, *per se*, but are, instead,

24   interested in the diversion of mail volume to the Internet and other electronic

25   alternatives. When looking, then, for a variable by which to model the diversion of mail,

26   it is not sufficient to merely identify an Internet variable which may appear to follow a

27   similar time path as the path of Internet diversion of the mail, but it is important to

28   identify a variable which reflects the actual driver of mail diversion to the Internet.

29   Second, if one is interested in attributing diversion over a specific time period to a

30   specific technological alternative to the mail, it is important that the time path of the

31   alleged mail diverter is consistent with the mail diversion one is trying to explain.

1   Third, if one hypothesizes that recent innovations have led to an increase in the rate

2   of diversion, this implies that those innovations had a more significant impact on mail

3   volumes than previous innovations.

4   Several intervenors have attempted to identify a number of specific variables that

5   they believe better explain recent mail volume declines than the Great Recession.

6   Looking more carefully at these suggestions, virtually all of them fail at least one of the

7   three considerations that I have just outlined.

8   **1. Not All New Technology Diverts Mail**

9   Dr. Lundblad, for example, in his laundry list of "post-2007 innovations" notes that

10 "the number of Facebook users has multiplied 20 times since then, and the number of

11 tweets per day has multiplied approximately 90,000 times." But how much mail is really

12 being diverted by Facebook or Twitter? The latter provides one with the ability to share

13 a 140-character message publicly. How much mail that was sent in 2007 was shorter

14 than 140 characters in length and would have been sent via Twitter instead? While one

15 might make a plausible case that Facebook interactions could substitute for personal

16 letters, the fact is, personal letters make up a trivial amount of total mail and their

17 volume has been trending downward for at least thirty years.

18 The Public Representative spends a considerable amount of time discussing

19 "payment methods using smartphones as an alternative to point of sale charges" (page

20 34), and criticizing my failure to consider this possible source of mail diversion. But the

21 mail has never been an option for point-of-sale charges, so the potential link between

22 such technology and mail volume would be tenuous at best.

23 **2. Time Path of Mail Volume Losses vis-à-vis Technological**
24 **Alternatives to the Mail**
25

26 **a. Internet Advertising Expenditures**

27 Certainly, there are some new technologies which one might plausibly see how they

28 could divert significant mail volume. One obvious example of this was also identified by

1 Dr. Lundblad: Internet advertising expenditures. The diversion risk here is fairly

2 obvious: a dollar spent on Internet advertising is a dollar which is not available to be

3 spent on other advertising media, including direct-mail advertising.

4 　　As I discussed earlier, in section I.D.3., the problem with Internet advertising

5 expenditures is that the time path over which Internet advertising expenditures grew the

6 strongest does not line up with the time period over which Standard Mail volume fell.

7 From 2002 to 2007, Internet advertising expenditures increased from $6.0 billion to

8 $21.2 billion, an increase of $15.2 billion or more than 250 percent (Lundblad

9 Statement, Figure 5 at page 19, underlying data are in the spreadsheet, "MPA et al.-LR-

10 R2013-11-2.xlsx", sheet "Internet Ad Revenue"). From FY 2002 to FY 2007, Standard

11 Mail volume grew at an average annual rate of 3.5 percent. It is certainly possible that

12 Standard Mail volume growth might have been stronger in the absence of Internet

13 advertising expenditures, but this strongly suggests that the impact of Internet

14 advertising expenditures on Standard Mail volume over this time period was fairly

15 minimal.

16 　　From FY 2008 to FY 2009, Standard Mail volume declined by 16.6 billion pieces.

17 But from 2008 to 2009, Internet advertising expenditures declined by $800 million

18 (Lundblad Statement, Figure 5 at page 19, underlying data are in the spreadsheet,

19 "MPA et al.-LR-R2013-11-2.xlsx", sheet "Internet Ad Revenue").

20 　　More recently, Internet advertising expenditures resumed their upward growth,

21 increasing by $9.1 billion (40.0 percent) from 2009 to 2011. Yet, as I showed in my

22 response to POIR No. 1, question 4 (and elsewhere), Standard Mail's share of total

23 advertising expenditures did not decline from FY 2009 (9.9 percent) to FY 2011 (9.9

24 percent). Standard Mail's share of total advertising expenditures did decline somewhat

25 in FY 2012, but most of the decline in Standard Mail volume in FY 2012 is not attributed

26 to the Great Recession in my work.

1   **b. Smartphones, Apps, et al.**

2   Several other technological innovations were suggested by intervenors which fall

3 somewhere between Twitter and Internet advertising in terms of how they might divert

4 the mail. These include the number of Smartphones sold (Statement of James Clifton,

5 Table Six, page 25) and annual growth in wireless data traffic (Public Representative,

6 Figure IV-2, page 33).

7   As I stated in my response to POIR No. 9, question 11, "[t]o the extent that the way

8 in which such technologies divert mail is by providing consumers with better access to

9 Internet alternatives to the mail, these technologies should properly be viewed as mere

10 continuations along pre-existing s-curves toward the technological adoption of

11 alternatives to mail." As such, I believe that the best way to model the impact of such

12 technologies on mail volume is as I have done in this case, through the continuation of

13 pre-existing diversion trends that pre-date the Great Recession (see, e.g., my response

14 to POIR No. 6, question 25, and POIR No. 9, question 7).

15   Nevertheless, the hypothesis that these represent new innovations that may have

16 altered the trend of mail diversion is not entirely implausible and may be worth

17 exploring.

18   **c. Time Path of Disputed Mail Volume Losses**

19   To evaluate whether the adoption and/or expansion of such technologies could be

20 the source of the mail volume losses at dispute in this case, it is important to understand

21 the time path of these volume losses. In essence, the mail volume losses at dispute in

22 this case are the difference between my estimate of the impact of the Great Recession

23 on market-dominant mail volumes and Dr. Lundblad's estimate of the same.[2]

---

[2] The Public Representative also calculated an alternative estimate of the mail volume losses attributed to the Great Recession. I focus here on Dr. Lundblad's estimate because the results implied by it are more extreme, in terms of the apparent level of diversion over this time period. I discuss the Public Representative's calculations and critiques in more detail in the Appendix to this document.

1   The year-over-year change in these estimates are summarized in Figure 11. This is

2   a variation on Figure 2 with pre-existing diversion – about which Dr. Lundblad and I are

3   in apparent agreement – removed.

4

5   **Figure 11**

Disputed Volume Losses
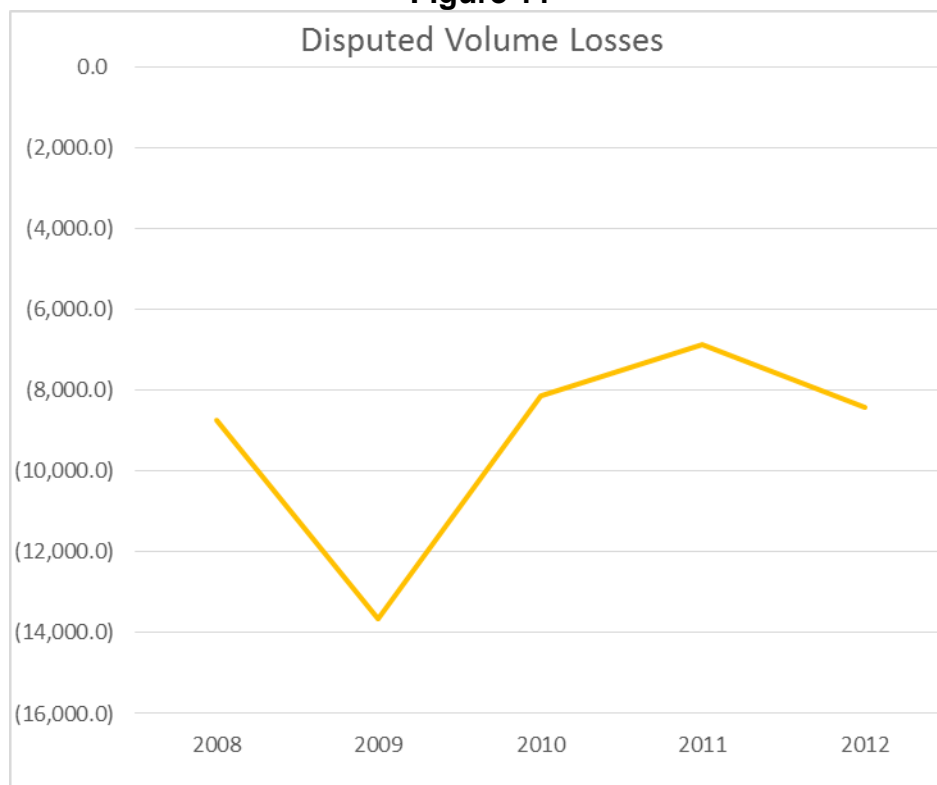
6

7

8   From FY 2007 to FY 2008, I attribute a decline in mail volume of 11.1 billion pieces

9   to the Great Recession. Dr. Lundblad's estimate of the Great Recession for that year is

10   2.3 billion. Hence, there is a decline in mail volume that year of 8.7 billion pieces (11.1

11   billion minus 2.3 billion) that I attribute to the Great Recession but which Dr. Lundblad

12   implicitly attributes to increasing electronic diversion. From FY 2008 to FY 2009, I

13   attribute a further decline in mail volume of 23.7 billion pieces, while Dr. Lundblad

14   attributes a further decline of only 10.0 billion pieces to the Great Recession. Hence, in

15   FY 2009, there are 13.7 billion lost pieces of mail in dispute.

1   There has been a great deal of discussion about the fact that my estimated impact of

2   the Great Recession on mail volumes is projected to continue to grow through at least

3   FY 2014 because of changes in underlying mail volume trends brought by the Great

4   Recession. I believe that these trends did, in fact, change and that this change was, in

5   fact, due to the Great Recession and that, as such, it is perfectly reasonable and

6   appropriate to attribute the impact of these trends to the Great Recession. But having

7   said that, it is important not to lose sight of the big picture: 80 percent of the volume loss

8   which I presented in my Statement in this case was lost from FY 2008 through FY 2010.

9   And, while much of the objection to my estimate has focused on the fact that the Great

10 Recession is continuing to have a negative impact on mail volumes even after its

11 "official" end, the most significant year-to-year impact of the Great Recession occurred

12 during the two years of the "official" recession: FY 2008 and FY 2009.

13   **d. Time Path of Smartphone Adoption**

14 The table below compares the disputed volume losses above with measures of

15 smartphone use presented by various Intervenors in this case.

16 Dr. Clifton, in his Statement, presented total smartphone sales by year (Table Six,

17 page 25). He reported worldwide sales data from five companies (Apple, Motorola,

18 Samsung, Nokia, and RIM). Dr. Clifton says that "Apple and RIM (until its recent

19 financial problems) are the two time series most indicative of the U.S. and North

20 American markets alone". Sales data for Apple (in millions of units) are presented in

21 Table 4 below.

22 The Public Representative showed data on "Reported Wireless Data Traffic" for the

23 years 2010, 2011, and 2012. (Figure IV-2 at page 33) These data are shown in the

24 middle column of Table 4 below. The units for these numbers are billions of megabytes.

25 The final column of Table 4 then presents what I identified above as "Disputed

26 Volume Losses". These are losses in mail volume which I have attributed to the Great

27 Recession but which Dr. Lundblad apparently believes were, instead, lost to electronic

1   diversion resulting from "advances in hardware and networks [which] in turn have

2   triggered the explosion of innovative devices, applications and services that have

3   transformed American life since 2007." (Lundblad at page 33)

4

5

Table 4

	Apple iPhone Sales (Worldwide)	Wireless Data Traffic	Disputed Volume Losses
2008	12	-	(8,743.1)
2009	24	-	(13,651.3)
2010	42	388	(8,142.3)
2011	89	867	(6,876.2)
2012	157.6	1,468	(8,431.8)

6

7   As noted, the big years for disputed volume loss were 2008 and, much more so,

8   2009. In contrast, iPhone sales spiked in 2011 and 2012. Wireless data traffic were not

9   reported by the Public Representative for 2008 or 2009[3], but given that wireless data

10   traffic more than doubled from 2010 to 2011 (from 388 to 867), the growth in wireless

11   data traffic for 2008, 2009, and 2010 must have been lower than in 2011 and 2012.

12   The timing simply does not work to explain the mail volume declines in 2008, 2009,

13   and 2010, which, as I noted above, are 80 percent of the mail volume losses which I

14   have attributed to the Great Recession.

15   In understanding the possible relationship between technological changes and mail

16   volumes, it is not sufficient to simply note that there were changes in technology during

17   the time that mail volumes declined substantially. Instead, the changes in technology

18   must be ones that can be shown to divert mail (and to do so at a far greater pace than

19   previous technological changes diverted mail) and have a pattern of adoption that

20   closely follows the pattern of mail volume losses. No intervenor in this case has

21   presented any such technology that can explain the pattern of volume losses suffered

22   by the Postal Service that occurred during and after the Great Recession. Therefore,

---

[3] A brief Google search produced this article (http://blog.ctia.org/2011/05/31/wireless-data-traffic-grew-110-from-2009-2010/) which reported Wireless Data Traffic for the last six months of 2009 of 108.

1   having reviewed the evidence presented by Dr. Lundblad and others, I remain

2   convinced that the best estimate of the loss in market-dominant mail volume attributable

3   to the Great Recession from FY 2008 to FY 2012 was 53.5 billion pieces.

1   **II. The Price Elasticities Used in This Case Are the Best Available Estimates**

2   Several intervenors have challenged the Postal price elasticities being used in this

3   case.

4   The price elasticities used in this case come from my econometric demand

5   equations and are of the same general magnitude as they have been in previous rate

6   proceedings (e.g., R2006-1 and earlier).

7   Intervenors have essentially raised two distinct critiques against the price elasticities

8   which I have estimated for this case. These two critiques are made most directly in the

9   Statements of Lawrence Buc (sponsored by the NPPC, MMA, and NAPM) and Dr.

10 James Clifton (sponsored by the Greeting Card Association).

11

12 **A. Econometric Estimation is the Correct Way to Estimate Price Elasticities**
13

14   Mr. Buc argues in his statement that "Valid Regression Analysis Must Meet Two

15 Conditions: Those Used to Estimate Price Elasticity of Demand Don't" (Buc Statement,

16 section heading at page 5.

17   **1. Mr. Buc's Critique of Econometric Estimation**

18   On page 6, Mr. Buc discusses the two reasons why the Postal Service's

19 econometric elasticities may not be valid: (1) elasticities require no structural breaks,

20 and (2) elasticities require "sufficient variation".

21   On page 7, he notes that "structural changes in the economy have altered the

22 relationship between mail volume and GDP over the years." He then goes on to add,

23 "And these structural changes **_might_** well have changed the relationship between mail

24 volume and price." (emphasis added).

25   Mr. Buc's statement is technically correct. The relationship between mail volume

26 and price **_might_** have changed. This is an empirical question, which is best answered

27 by empirical testing. The Postal Service has tested this proposition empirically and has

1   found no evidence that Postal price elasticities have changed over time, either because

2   of increasing electronic diversion or because of the Great Recession. In addition to my

3   work, Mr. Buc cites two empirical studies which looked at the issue of whether Postal

4   price elasticities have changed over time at page 4 of his Statement:

5

6   "Analysis of Postal Price Elasticities, Report Number: RARC-WP-13-008, Office
7   of the Inspector General, United States Postal Service, May 1, 2013.

8   Are U.S. Postal Price Elasticities Changing? Margaret M. Cigno, Katalin K.
9   Clendinin and Edward S, Pearsall, Presented at the 21st Conference on Postal
10   and Delivery Economics, Center for Research in Regulated Industries, May 29-
11   June 1, 2013." (footnote 1, page 3).

12   As noted by Mr. Buc, both of these studies find no evidence that Postal price

13 elasticities have changed over time, much less that they have become sufficiently large

14 as to call into question the direction of the financial impact of the exigent rate increase

15 on the Postal Service.

16

17   "Studies conducted over a number of years in the United States have generally
18   found that the demand for most classes of mail now classified as Market
19   Dominant is inelastic with respect to price…. Three recent studies – one by the
20   Postal Service's Office of the Inspector General ("OIG"), one by the Postal
21   Regulatory Commission's technical staff, and one by the Postal Service itself –
22   all produce these results for most Market Dominant mail groupings." (Buc
23   Statement at pp. 2 - 3)

24

25   Mr. Buc then notes the relatively narrow range over which real Postal prices have

26 varied, especially since the enactment of the PAEA, and suggests that this might cause

27 the econometric results to be unreliable for predicting the impact of larger-than-inflation

28 rate increases. Mr. Buc correctly explains the issue on page 6, when he says, "[w]hen

29 the values of an independent variable are tightly clustered, there is little predictive

30 power in the relationship of the dependent variable and the independent variables

31 outside of the range of independent variables used in the estimation procedure." While

32 this is a valid theoretical point, it is not, in fact, applicable to the present case. The rate

33 increases being proposed in this case are sufficiently modest and the sample periods

1 over which the Postal Service's demand equations are estimated are sufficiently long

2 that, in fact, real after-rates prices in this case fall well within "the range of independent

3 variables used in the estimation procedure" as shown in Table 5.

4

5 **Table 5**
6 **Range of Real Postal Prices**

	Real Price Range over Econometric Sample Period		Real After-Rates Price (2014PQ3)
	Minimum	Maximum	
First-Class Single-Piece	$0.2098	$0.2490	$0.2344
First-Class Workshared	$0.1503	$0.1836	$0.1678
Standard Regular	$0.0943	$0.1235	$0.1101
Standard ECR Mail	$0.0786	$0.0984	$0.0897
Standard Nonprofit Mail	$0.0584	$0.0742	$0.0630
Standard Nonprofit ECR	$0.0411	$0.0513	$0.0500
Periodicals Mail	$0.1082	$0.1289	$0.1185

7

8   **2. Mr. Buc's Use of Survey Results to Re-Estimate Postal Price**
9   **Elasticities**

10

11   Having rejected econometrics as an appropriate tool for modeling the price elasticity

12 of mail, Mr. Buc proposes to instead rely on survey data from mailers.

13   "Because econometrics is of limited use in estimating price-elasticity of demand

14 when prices are enormously stable and the communications market is undergoing a

15 structural transformation, a group of industry participants sponsored a study of mailers

16 to elicit information about how mailers make decisions with respect to

17 operational/transactional communications and marketing mailings. The results of these

18 studies provide useful insight on price elasticity of demand."

19   Mr. Buc distributed 38 surveys to large users of First-Class Mail and 36 surveys to

20 large users of Standard Mail (with apparently some overlap). He received responses

21 from 13 First-Class Mailers and 14 Standard Mailers. Mr. Buc concedes that his survey

22 samples are not random. More importantly, Mr. Buc also admits that his survey results

1   may be biased by the fact of the respondents all "being mailers of large volumes of

2   mail." (Buc at page 11)

3   **a. Standard Mail**

4   For Standard Mail, Mr. Buc asked mailers if they had a formal model which they

5   used "for selecting mail recipients from lists of potential recipients". If they did, Mr. Buc

6   asked these mailers to formally run this model. He got affirmative responses here for 4

7   Standard Mailers. Based on the models used by these mailers, they had a combined

8   elasticity somewhere between -1.2 and -1.8. Five more mailers "also provided elasticity

9   estimates based on their experience with and understanding of their marketing models

10   rather than actually running the models themselves". These mailers had an estimated

11   own-price elasticity of approximately -1. (Buc at pages 13 – 15)

12   Direct surveys can be unreliable as people may have a tendency to over-estimate

13   their reaction to incentives, such as price changes. That said, Mr. Buc addresses this

14   fairly cleverly by focusing on mailers who have an explicit model which they use to

15   determine mail volume. This certainly gives these results the appearance of objectivity.

16   In reality, however, Mr. Buc's results here are based on a total of 9 mailers, only 4 of

17   whom actually ran a formal model in response to Mr. Buc's question. Given the

18   extremely short time since his materials were submitted, the amount of other material

19   requiring response over that time, and the fact that they were submitted under seal, I

20   have not had the opportunity to look at Mr. Buc's detailed survey results. But with a

21   sample size this small, it is certainly possible that his results are being driven by one or

22   two outliers. Mr. Buc also does not specify what type of Standard Mail the mailers who

23   responded to his question send. The econometric own-price elasticity for Standard

24   ECR Mail (which accounted for just over 30 percent of total Standard Mail volume in FY

25   2012) in this case is -0.888. It would certainly not be surprising to find some Standard

26   mailers, particularly Standard ECR mailers, whose individual Postal price elasticity

27   might be at or above one (in absolute value). But the fact that a very small subsample

1   of Standard Mailers self-report that they have an elasticity greater than what I have

2   estimated provides virtually no insight into the elasticity for all Standard mailers.

3   **b. First-Class Mail**

4   Mr. Buc could not do a parallel analysis of First-Class Mail because, as he notes,

5   First-Class mailers do not necessarily get to determine the amount of mail volume that

6   they send. In fact, First-Class mailers' inability to determine the amount of mail volume

7   that they send would imply a very low price elasticity, if, for example, mailers are

8   required to send certain things through the mail.

9

10   "[F]or First-Class operational and transactional mail (bill and statements, privacy
11   notices, etc.) customers may have a legal choice about whether they choose to
12   receive a particular communication by mail or through an electronic channel.
13   Even in circumstances for which customers don't have a legal right, a company
14   may honor a customer's communication preference because of the risk of losing
15   a customer." (Buc Statement, page 16)

16

17   Not only does this quote imply a low own-price elasticity for First-Class Workshared

18   Mail, it also shows that the decision to send information electronically or via postal mail

19   is mainly a matter of customer preference. If it is not worth losing a customer to save

20   postage at current rates, it seems very unlikely that it would be worth losing a customer

21   to save an additional two cents.

22   Mr. Buc notes, instead, that "[m]ailers say that they prefer electronic channels

23   because mail is expensive compared to the electronic substitutes." (Buc at page 17) Of

24   course, this is the same as it ever was. Postage rates have always exceeded the

25   marginal rate of delivering electronic substitutes. I looked at the question of whether

26   mail would be expected to become more price-elastic in the face of growing electronic

27   alternatives in my Rebuttal Testimony in Docket No. R2006-1 (USPS-RT-2). In my

28   testimony in that case, I pointed out that economic theory does not dictate that mail

29   must get more price-elastic given increasing electronic alternatives and, in fact, there is

1   an alternate theory that suggests that mail might actually become less price-elastic in

2   such a situation under certain circumstances. In my R2006-1 Rebuttal Testimony, I also

3   conducted several empirical tests which found no evidence that the own-price elasticity

4   of First-Class Mail was increasing over time.[4]

5   In conclusion, the question of whether Postal price elasticities have changed from

6   their historical norms is an empirical question that can be tested using empirical

7   methods. I and others have done extensive testing of the question of whether Postal

8   price elasticities have changed over time. Mr. Buc's conversations with mailers, while

9   potentially interesting, are an insufficient substitute for rigorous econometric analysis.

10   **B. My Price Elasticities Are Consistent With Estimates by Other Analysts**

11   Dr. Clifton agrees with me that econometric analysis is the proper approach for

12 estimating price elasticities. He disagrees with me, however, that the econometric

13 evidence supports the price elasticities which I rely upon in this case.

14

15   "[T]he own-price elasticity of Single-Piece FCLM used in the demand equation to
16   determine the impact of the exigent rate increase on Single-Piece volume is not
17   credible…. the current true value lies between -0.7 and -0.8…. when modeled
18   correctly, the own-price elasticity of First-Class worshared letters is already in
19   the absolutely price elastic range, at least -1.0 and probably closer to -1.1 or -
20   1.2." (Clifton Statement at page 3)

21

22   Dr. Clifton comes to this conclusion by looking at 12 studies which purported to

23 estimate an own-price elasticity for First-Class Single-Piece Mail or the foreign

24 equivalent and 8 studies of First-Class Presort Mail (or its foreign equivalent). I have

25 not had the opportunity to evaluate each of these 20 studies in sufficient detail to fully

26 discuss the merits of each study or its applicability to my work.

---

[4] My R2006-1 Rebuttal Testimony dealt exclusively with First-Class Single-Piece Mail. The theoretical considerations there are equally applicable to First-Class Workshared Mail. I have also conducted empirical analyses of the stability of the own-price elasticities of both First-Class Single-Piece and Workshared Mail (as well as all other mail categories), which I have repeated much more recently than R2006-1.

1   Based purely on Dr. Clifton's own summaries, however, it is clear that his summary

2 at page 3 of his Statement (quoted above) is a mischaracterization of the overall results

3 from these studies. As noted above, Dr. Clifton cites 12 econometric estimates of First-

4 Class Single-Piece Mail. For these studies, Dr. Clifton calculates an average own-price

5 elasticity of -0.536 (Clifton at page 61). The "-0.7 and -0.8" in the above quote is the

6 average "of the highest 6 studies" (out of 12 total). (Clifton at page 35) The average

7 own-price elasticity for First-Class Workshared Mail in studies cited by Dr. Clifton is

8 −0.75 (Clifton at page 37).

9   In looking at Dr. Clifton's analysis, it is important to understand the framework

10 against which to judge these results and compare them to the Postal Service's

11 econometric estimates.

12   **1. Why Does Price Elasticity Matter in This Case?**

13   The reason why Dr. Clifton goes to the trouble of arguing that the price elasticity of

14 First-Class Mail is greater than the Postal Service's estimate is because if the price

15 elasticity of mail is too high, the exigent rate increase being proposed by the Postal

16 Service may cause volume to decline by more than revenue per-piece increases,

17 leading to a net loss in Postal Service revenue.

18   One of the key differences between the Postal Service's econometric models for

19 First-Class Mail and several of the econometric models analyzed by Dr. Clifton is that

20 several of these alternate equations model explicit cross-price relationships between

21 Postal products. But if a rate increase on one Postal product merely shifts some mail

22 from that mail category to another mail category, that volume (and its associated

23 revenue) is not lost to the Postal Service. And in the case of an across-the-board rate

24 increase as is being proposed by the Postal Service, there is little reason to expect

25 much, if any, mail to shift between mail categories.

26   For the purposes of evaluating the impact of Postal rate increases on Postal Service

27 finances, then, the relevant measure of elasticity is not own-price elasticity, but is,

1 rather, the Postal price elasticity of mail, which, mathematically, is the sum of the own-

2 price elasticity plus any cross-price elasticities with respect to other Postal products.

3   A simple example may help to clarify this.

4   Consider two categories of mail each of which has volume of 100, an own-price

5 elasticity of −0.8, and a cross-price elasticity with respect to the other category of 0.5 as

6 shown in Table 6.

7 **Table 6**
8 **Example Calculation of Postal Price Elasticities**

		Price Elasticity with respect to	
	Volume	Mail Category A	Mail Category B
Mail Category A	100	-0.8	0.5
Mail Category B	100	0.5	-0.8

9

10   If the price of Mail Category A is increased by 10 percent, the volume of Mail

11 Category A would be expected to decline by 8 percent (-8). But, if the price of Mail

12 Category A is increased by 10 percent, the volume of Mail Category B would be

13 expected to increase by 5 percent (+5). Hence, the total mail volume lost to the Postal

14 Service in this case would not be the 8 pieces of Mail Category A that were lost but

15 would only be 3 pieces: the 8 fewer pieces of Mail Category A less the 5 pieces of Mail

16 Category A that shifted into Mail Category B.

17   Now, consider the impact of a 10 percent across-the-board rate increase. The 10

18 percent rate increase in Mail Category A will lead to an 8 percent decline in the volume

19 of Mail Category A. But the 10 percent rate increase in Mail Category B will lead to a 5

20 percent <u>increase</u> in the volume of Mail Category A. Taken together, then, the impact of

21 a 10 percent across-the-board rate increase would be to reduce the volume of Mail

22 Category A by only 3 percent (a loss of 8 plus a gain of 5). The same, of course, is true

23 of Mail Category B: the 8 percent decline in volume due to the own-price elasticity will

24 be partially offset by a 5 percent increase in volume from the cross-price elasticity.

1   Hence, the Postal Price Elasticity of Mail Category A with respect to an across-the-

2   board rate increase is equal to the sum of the own-price elasticity with respect to Mail

3   Category A (−0.8) and the cross-price elasticity with respect to Mail Category B (0.5), for

4   a total Postal price elasticity for Mail Category A of -0.3: a 10 percent across-the-board

5   rate increase can be expected to reduce the volume of Mail Category A by 3 percent.

6   **2. Importance of Cross-Price Elasticities in Comparing Econometric**
7   **Models**
8

9   An example of the importance of cross-price elasticities can be seen in Dr. Clifton's

10   analysis of a 2013 study by Jarosik, et al., which Dr. Clifton analyzes on page 45 of his

11   Statement.

12   Clifton points to the Jarosik, et al. study as evidence that First-Class Mail is more

13   price-sensitive than the Postal Service estimates: "Jarosik et al. estimate the long-run

14   own-price elasticity for First Class letter mail as -0.44, nearly three times higher than the

15   [Postal Service's] model estimate". (Clifton Statement, page 45).

16   But how different are Jarosik, et al.'s results from the Postal Service's? Dr. Clifton is

17   correct that Jarosik, et al. estimate the long-run own-price elasticity for First-Class Mail

18   in the United Kingdom of −0.44. But they also estimate a cross-price elasticity with

19   respect to Second-Class Mail (a lower-service substitute for First-Class Mail in the U.K.,

20   which has no U.S. counterpart) of 0.24. Hence, the overall Postal price elasticity of

21   First-Class Mail in this analysis is -0.2, which is identical to the Postal Service's estimate

22   for First-Class Single-Piece Mail to one decimal place.

23   The result is similar for a study by Cigno, Patel, and Pearsall. Dr. Clifton points

24   approvingly to their estimated own-price elasticity for First-Class Single-Piece Mail of

25   −0.846. But this is because Cigno, et al., model their mail equations as having a

26   complete set of cross-price elasticities. That is, every category of mail is a function of

27   the price of every other category of mail. Considering both own- and cross-price

28   effects, the Postal price elasticity of First-Class Single-Piece Mail is −0.28, somewhat

1   greater than the Postal Service's estimate (−0.16), but not dramatically so and certainly

2   nowhere near price-elastic.

3   Another paper which Dr. Clifton includes in his analysis is a study of Royal Mail

4   which I referenced in my response to POIR No. 9, question 7 (Veruete-McKay, Leticia;

5   Soteri, Soterios; Nankervis, John C.; and Rodriguez, Frank (2011) "Letter Traffic

6   Demand in the UK: An Analysis by Product and Envelope Content Type," *Review of*

7   *Network Economics*: Vol. 10: Issue 3, Article 10). The striking thing about this paper is

8   how similar the demand model presented in this paper is to my model in this case.

9   As I noted above in reference to the Jarosik paper, Royal Mail offers two levels of

10   service for Non-Presort Mail which can make direct comparisons to the Postal Service's

11   own-price elasticity for First-Class Single-Piece Mail tricky. Generally speaking, models

12   estimated using Royal Mail data find an own-price elasticity for First-Class Non-Presort

13   Mail that is quite a bit greater than the own-price elasticity of First-Class Single-Piece

14   Mail in the United States. But this is typically offset in these models by moderately high

15   cross-price elasticities between First-Class and Second-Class Non-Presort Mail and a

16   lower own-price elasticity for Second-Class Non-Presort Mail, for which there is no

17   American counterpart.

18   For example, in the Veruete-McKay, et al. paper, the authors estimate an own-price

19   elasticity for First-Class Non-Presort Mail of -0.77, an own-price elasticity for Second-

20   Class Non-Presort Mail of -0.31, and a cross-price elasticity in each equation of 0.3 with

21   respect to the other. This leads to estimated Postal price elasticities of -0.44 for First-

22   Class Non-Presort Mail (-0.77 + 0.33) and essentially zero for Second-Class Non-

23   Presort Mail (-0.31 + 0.31). The volumes of First-Class and Second-Class Non-Presort

24   Mail are roughly equal, so that the overall Postal price elasticity for Single-Piece Mail

1 here is approximately -0.2 which is identical to the First-Class Single-Piece Mail

2 elasticity which I have estimated for this case (to the first decimal place).[5]

3. Changes in Price Elasticities Over Time?

4   Dr. Clifton very clearly believes that the price elasticity of First-Class Mail has

5 increased because of the increased level of electronic alternatives to the mail. Note that

6 this implies a causal relationship: the price elasticity of mail is a function of the

7 availability (and/or price) of electronic substitutes.

8   This is important here because, for example, Dr. Clifton, in his R2006-1 testimony

9 (which is one of the 12 analyses he evaluates here), touted a linear demand model

10 (what he calls a VES model) as superior to the Postal Service's constant-elasticity

11 model (which Dr. Clifton calls a CES model) because the price elasticity varies over

12 time with a linear demand model.

13   In this Statement, Dr. Clifton proudly touts the conclusion that "there is not even one

14 postal demand study using variable elasticity of substitution (VES) model structures that

15 concludes own-price elasticities are not increasing over time as competition from

16 esubstitutes has increased." (Clifton Statement at page 43)

17   I explained this result in my Rebuttal Testimony in R2006-1 (USPS-RT-2).

18   "[A] VES specification is equally "restrictive." The "restriction" on elasticity within
19   a CES specification is that the elasticity with respect to variable x is exactly equal
20   to b_x, the coefficient on x. Using a VES specification, the elasticity of volume v
21   with respect to variable x is exactly equal to $b_x \cdot (x/v)$. This is still a fixed restriction;
22   all that is different is that the restriction is not constant, but is instead a strict
23   function of x and v as well.

24   In other words, a VES specification only indirectly "impact[s] the price elasticity"
25   because of the "changing scope and intensity of competition from substitutes," to
26   the extent that the "changing scope and intensity of competition from substitutes"
27   affect volume." (R2006-1, USPS-RT-2, page 45, lines 17-26)

---

[5] As further evidence of the relative price-inelasticity of mail in the UK, Royal Mail recently increased prices by 10 to 25 percent over the past two years (e.g., the First-Class Non-Presort stamp price was increased from 46p to 60p in 2012). In its annual report, "Annual monitoring update on the postal market, Financial year 2012-13", 22 November, 2013, Royal Mail reported that its "[p]rofit margins and cash flow improved", explaining that "[t]he main cause for the improvement in profit was an increase in revenue largely as a result of the price rises across most products in April 2012" (Paragraph 3.35 on pages 20 – 21).

1   All that Dr. Clifton has found here is that First-Class Single-Piece Mail volumes have

2   declined in recent years. If volume declines, then a VES price elasticity will increase <u>by</u>

3   <u>construction</u>. The question of whether a CES or VES specification is more appropriate

4   cannot be answered by picking the model that shows price elasticity moving in the way

5   you want it to (and, in fact, it is fairly simple to model price elasticity as a function of

6   technological alternatives to the mail within a CES framework). The question of whether

7   a CES or VES specification is more appropriate is an empirical question that can be

8   tested statistically. In my R2006-1 Rebuttal Testimony, I did so, and concluded that my

9   CES model was superior to Dr. Clifton's VES model (R2006-1, USPS-RT-2, pp. 47-48).

10   **4. First-Class Workshared Mail**

11   Dr. Clifton's results are even more tenuous with respect to First-Class Workshared

12   Mail. As Dr. Clifton notes himself at page 37 of his Statement, "The postal own-price

13   elasticities for First Class workshared mail shown in Figure 13 on page 38 are

14   remarkably consistent across countries, for the U. S. (-0.393, -0.345), UK (-0.17, -0.44),

15   and for France -(0.539)." Dr. Clifton then decides to ignore the remarkable consistency

16   of these estimates and instead bases his conclusion that First-Class Workshared Mail

17   "is already in the absolutely price elastic range, at least -1.0 and probably closer to -1.1

18   or -1.2" on, in Dr. Clifton's own words (at page 37), "one glaring exception": Finland. Dr.

19   Clifton identifies three studies from Finland which purportedly show own-price

20   elasticities for First-Class Workshared Mail of −0.92, −1.38, and −1.8.

21   When evaluating the price elasticity of First-Class Workshared Mail in the United

22   States, it is not at all clear to me why one would give more weight to an estimate of the

23   price elasticity of First-Class Workshared Mail in Finland than to estimates of the price

24   elasticity of First-Class Workshared Mail in the UK or France, much less an estimate of

25   the price elasticity of First-Class Workshared Mail in the United States. The simplest

1   explanation of the results cited by Dr. Clifton could be that mail is more price-elastic in

2   Finland than elsewhere.[6]

3   In conclusion, when Postal price elasticities are properly calculated, so that one can

4   make a proper apples-to-apples comparison, my results are, in fact, quite consistent

5   with the vast majority of other Postal analysts.

---

[6] On the other hand, it appears that Finnish Postal officials do not believe that mail is price-elastic in Finland as plans were recently announced to increase Finnish postage rates by 20 percent. ("Thousands of postal sector jobs to disappear", *Helsinki Times*, 02 Dec 2013, http://www.helsinkitimes.fi/business/8576-thousands-of-postal-sector-jobs-to-disappear.html)

1   **Appendix: Additional Response to Specific Intervenor Comments**

2   The body of this Reply Statement addresses the key issues raised by Intervenors in

3   their Comments and supporting Statements. In addition to the general comments

4   addressed above, however, several Intervenors raised criticisms of my econometric

5   work in this case in a number of areas. This Appendix addresses the specific

6   comments issued by Intervenors last week to the extent that they raised issues which

7   are not raised in the body of this Reply Statement.

8

9   **MPA, APC, ACMA, DMA, ANM, AMSP, MMA, NNA, PIA, QGI, RRD, SIIA/ABM,**
10   **Time**
11
12   The MPA, et al., sponsor the Statements of Dr. Christian Lundblad and Jon Swallen.

13   Mr. Swallen's Statement was addressed in section I.D.3. above. My reply to the bulk of

14   Dr. Lundblad's Statement formed the basis of much of section I. above.

15   There were a couple of additional issues raised by Dr. Lundblad, however, which are

16   addressed here, as well as one issue raised within the MPA, et al. comments that was

17   not addressed by Dr. Lundblad.

18   **1. Stationarity**

19   One issue of concern raised by Dr. Lundblad was the possibility of "spurious

20   regressions" (Lundblad Statement at page 25). Dr. Lundblad argues that "Failure to

21   follow these safeguards can produce spurious estimates of statistically significant

22   coefficients among trending variables without any actual economic link among them."

23   (pp. 25-26) Consider the problem in the context of a simple bivariate regression:

24                                $y_t = \beta_0 + \beta_1 x_t + \varepsilon_t$

25   where the original variables in levels are non-stationary random walk series,

26                                $(x_t, y_t) \sim I(1)$

27   The regression is called "spurious" if the errors are serially correlated, i.e.,

1               $$\varepsilon_t = \rho\varepsilon_{t-1} + \varepsilon'_t$$

2   is an autoregressive process of order 1, AR(1). We can test the hypothesis that $\rho = 0$ in

3   various ways, including, for example, by evaluating the Durbin-Watson (DW) statistic.

4   Granger and Newbold define spurious regression as occurring when $R^2 > DW$.

5   Other authors including Hamilton (1994) define spurious regression as occurring

6   when ε_t is non-stationary. Under this definition, one can perform a unit root test on the

7   error terms to test for spurious regressions.

8   None of the Postal Service's demand equations in this case shows a value of

9     $R^2 > DW$. Hence, I have not presented any "spurious regressions" based on the

10   definition of Granger and Newbold. Unit root tests on the error terms of the demand

11   equations have also been performed (and are reported as part of the econometric

12   output filed in USPS-R2010-4R/9 in this case). The only cases which failed the unit root

13   test in the residuals were extremely minor mail categories (e.g., Postal Penalty Mail),

14   which are not included in my estimation of the impact of the Great Recession on

15   Market-Dominant mail volumes.

16   If concerns remain of possible spurious regression, this problem is not eliminated

17   with differencing. In fact, as described below, research into this topic by my colleagues

18   at RCF suggests that while a unit root test is able to reject non-stationarity of residuals

19   for some mail categories after differencing, non-stationarity actually emerges in other

20   equations which had previously demonstrated stationary error terms.

21   Dr. Lundblad appears to base his "spurious regression" argument on the fact that we

22   observe an R^2 of up to 0.99: "The first reaction of a responsible econometrician to an R^2

23   of 0.99 is not to assume that one has found an amazingly good fit, but to assume that

24   the results are symptoms of a statistical problem. Spurious regressions like those

25   discussed above in the text yield huge but incorrect R^2 values. The better-specified

26   equations can still detect relationships-my differenced exposure coefficients are still

1   significant-but one can never explain 99 percent of the variability of a series like this."

2   (Lundblad Statement at page 26, footnote 14)[7]

3   Dr. Lundblad's argument here is based on "experience" but is not supported. On the

4   contrary, the research of my colleagues at RCF suggests that there exists no significant

5   difference in adjusted R^2 between the demand equation specifications presented in this

6   case and alternate specifications using differenced series or error correction models.

7   For First Class Workshared letters, cards & flats, for example, there exists a

8   cointegrating relationship between the natural logarithms of volume and price. The First-

9   Class Workshared specification presented in this case has an adjusted R^2 of 0.9896.

10   Early experiments with a "more sophisticated" error correction model produced an

11   adjusted R^2 of 0.9722. The error correction model improved the Durbin Watson statistic

12   to 1.703 compared with a value of 1.474 for the model presented in this case. If the

13   high adjusted R^2 statistics here were caused by spurious regression problems, one

14   would anticipate a significant drop in R^2 statistics when switching to an error correction

15   model or a model with differencing. In fact, however, of all of the mail categories filed

16   with the Commission in January, 2013, only a few saw a meaningful drop in R^2 after

17   differencing. And these only occurred when the time series analyzed was very short.

18   Moreover, even with significant drops in R^2 after differencing, the models with

19   differencing indicated no obvious improvement in Durbin Watson statistic. Based on

20   these experiments, it seems most likely that the drop in R^2 in these few cases is caused

21   by the loss of level information due to over-differencing these time series, which

22   becomes especially apparent when the time series analyzed is short.

---

[7] As I noted in my response to POIR No. 4, question 4(d), "[i]t is common within empirical econometric work to find very high R-squared values when evaluating time series data which includes a strong trend component as it is fairly easy in such cases to "explain" much of the variation in such variables using either time trend variables or explanatory variables that exhibit similar trends." For this reason, that it is easy to get extremely high R^2 values by modeling trends as functions of trends, as a general rule, I make very limited use of R^2 as an analytical tool in my work. Instead, the regression diagnostics of which I make the most use include mean-squared errors, mean-squared errors over more recent time periods (e.g., over the past five years), recursive (one-quarter-ahead) residuals, and coefficient t-statistics (see my response to POIR No. 3, question 7).

1   In summary, there is no clear evidence suggesting spurious regression problems

2   with the demand equations presented by me in this case. Nor is there any significant

3   improvement, in either the interpretation of coefficient estimates or in out-of-sample

4   forecasting, with differenced models or error correction models. On the contrary,

5   differenced models and error correction models appear to raise unresolved issues and

6   modeling difficulties.

7   The high R^2 statistics associated with the Postal Service's demand equation

8   regressions appear to be reasonably realistic descriptions of good model fit rather than

9   the results of spurious regressions.

10   **2. Dr. Lundblad's Exploratory Analysis**

11   Rather than "[c]onstructing a far more sophisticated volume (demand) specification

12   that incorporates all the joint relationship between mail volume, price elasticities,

13   electronic diversion, and cyclical dynamics" (Lundblad Statement at page 32), because

14   doing so "would be extremely difficult", Dr. Lundblad opts for a much simpler approach:

15   an approach that is, in fact, far too simple for the Commission's purposes here.

16   Specifically, Dr. Lundblad estimates a set of "simple regressions of the percentage

17   change in mail volume on percentage changes in several broad macro aggregates." He

18   notes approvingly that "a regression of growth rates on growth rates will avoid the

19   problem of producing spurious estimates from trend variables." But what he fails to note

20   is that his model, by assuming a stable relationship between mail volumes and "several

21   broad macro aggregates" from 1970 through mid-2013, completely misses the point of

22   the exercise here. The Great Recession was "exceptional and extraordinary". The

23   Commission has agreed with that.

24   Consider one of Dr. Lundblad's models which models year-over-year growth in First-

25   Class Mail volume as a function of year-over-year growth in non-farm payroll

26   employment. Looking at Library Reference MPA et al.-LR-R2013-11-3, this appears to

27   be the best fit of any of the four macro-economic variables tested for First-Class Mail.

1   The estimated coefficient on this measure of employment is 1.12 with a t-statistic of

2   5.38 (this is actually quite similar to my estimated elasticity on trend employment of 1.09

3   with a t-statistic of 9.62).

4   From 1971Q1 through 2007Q3, the average error from this model is +0.007.

5   Dropping observations after 2007Q3 and re-estimating the equation over this shorter

6   sample period, the estimated employment coefficient is 0.76 with a t-statistic of 6.58.

7   From 2007Q4 through 2013Q3 – the period of specific interest in this case, of course

8   – the average error from Dr. Lundblad's full-sample (1971Q1 – 2013Q3) model is

9   −0.045. In other words, First-Class Mail volume is consistently 4.5 percent below what

10 his model would have expected. This figure is very close to the impact of the trend

11 variables which I have included in my models to explain the unique impact of the Great

12 Recession. Dr. Lundblad's "simple regression" offers no explanation for what might

13 have happened beginning in late 2007 that might have adversely affected First-Class

14 Mail volume.

15   Re-estimating Dr. Lundblad's model over the sample period from 2007Q4 through

16 2013Q3, the estimated employment coefficient is 0.62 with a t-statistic of 5.50.

17 Interestingly, both sub-sample coefficient estimates are smaller than the full-sample

18 coefficient estimate. The shorter sample has a smaller coefficient because, while

19 employment has begun to recover (however tentatively) from the Great Recession,

20 First-Class Mail volumes have not.

21   But this entire analysis rests on an assumption that the relationship between First-

22 Class Single-Piece Mail volume and the macro-economy has remained unchanged

23 since 1970 (an assumption that is rebutted by Dr. Lundblad himself in his Figure 3 at

24 page 14) and was entirely typical during the Great Recession (an assumption that was

25 implicitly rebutted by Dr. Lundblad in his Table 2 at page 9, as I showed in my Table 1

26 above). Such an assumption would seem to render this analysis worthless in terms of

1 attempting to estimate the "extraordinary and exceptional" circumstances of the Great

2 Recession as required by the Commission.

3   **3. Inclusion of Recession-Related Variables in Econometric Models**

4   At pages 27 and 28 of their Comments, the MPA, et al. raise an econometric

5 criticism that was not raised in Dr. Lundblad's Statement.

6

7   "Mr. Thress's failure to include additional explanatory variables that explicitly
8   model other indicators of the business cycle is powerful evidence that the volume
9   decline was not primarily recession-related. If the recession were really the main
10   cause of the decline in mail volume since 2007, one would expect that he could
11   have improved the explanatory power of his model by adding cyclical explanatory
12   variables for some of the supposed manifestations of the recession that he
13   recited during the November 19 hearing (e.g., changes in 'real median household
14   income,' 'the rate of household formation,' the number of 'credit card accounts'
15   and 'mortgage loan accounts,' the rate of home ownership, and 'gross private
16   domestic investment'). Tr. 1/101-102, 114, 117 (Thress). The Commission can
17   reasonably infer from the absence of these variables in Mr. Thress's model as
18   filed that he tested them and discovered that they did not improve its explanatory
19   power." (MPA, et al. Comments at pp. 27 – 28)

20

21   The MPA, et al. shares Dr. Lundblad's mistake of viewing the Great Recession as a

22 typical business cycle, the impact of which can, therefore, be modeled in traditional

23 ways by looking at historical relationships across previous business cycles. As I

24 discussed in section I.B. of this Reply Statement, this is wrong. The Great Recession

25 was an "exceptional and extraordinary" event precisely because it failed to behave as a

26 typical business cycle. For many of the variables identified here, the impact of the

27 Great Recession on these variables had two important features. First, the Great

28 Recession had an effect on the trend component of these variables in addition to having

29 a cyclical effect (see, for example, my response to POIR No. 1, question 9, where I

30 discuss changes in loan account trends before and after the 2008-2009 period).

31 Second, the behavior of these variables during and since the Great Recession differed

32 from the historical relationship between these variables and more typical business

1   cycles. For example, the rate of household formation has historically been very stable;

2   the impact of the Great Recession on household formation was extremely unusual

3   relative to historical norms.

4   Because of this, the "extraordinary and exceptional" impact of the Great Recession

5   on these factors differs since 2007 or 2008. As I explained in my response to POIR No.

6   4, question 2(b), "Explanatory variables that would be expected to pick up changes in

7   mail volume trends resulting from the factors which caused and have been triggered by

8   the events of what I have called the Great Recession, such as Americans' declining use

9   of credit cards and reduced volumes of other types of financial mail, would likely take

10   the form of shorter-length time trends starting over the past few years." Hence the

11   effect of the Great Recession on mail volume through all of these factors - credit cards,

12   home ownership, and household formation – would end up following a very similar time

13   path: a negative time trend since late 2007 or early 2008.

14   POIR No. 9, question 10(a) essentially raised this very issue: "Would it be possible

15   to econometrically separate the 'other trends in mail volumes' as compared to the

16   'negative trends caused by the Great Recession that are not necessarily the result of

17   changes in the rate of Internet mail diversion?'". Please see my response to that

18   question. Please also see my response to POIR No. 9, question 7 for a discussion of

19   the risks of "conflation of trends in econometric modeling."

20   Based on my two decades of experience as an applied econometrician, it is my

21   belief, as I said in my response to POIR No. 3, question (1), that the appropriate way of

22   isolating the separate effects of the Great Recession which have affected mail volume

23   trends since 2008 "requires moving outside of the econometric models and analyzing

24   the underlying factors that are driving these trends," which I have done repeatedly and

25   extensively in this case.

26   Finally, as to the first and last variable suggested in the above quote. Median

27   household income data are only available annually with a fairly significant time lag

1 (2012 data were only released within the past two months, for example), which make

2 them inappropriate for inclusion in an econometric model of quarterly mail volumes

3 which is updated regularly. Gross private domestic investment is included in my

4 Standard Mail equations used in this case, so its inclusion in this list seems curious.

5 To be perfectly clear, therefore, any suggestion that the "Commission can

6 reasonably infer from the absence of these variables in [my] model as filed that [I] tested

7 them and discovered that they did not improve its explanatory power" is entirely

8 incorrect.

1   **FSR, NAMIC**

2   The Financial Services Roundtable (FSR) and National Association of Mutual

3   Insurance Companies (NAMIC) criticized the Postal Service's Exigent Impact of the

4   Great Recession in their Comments beginning at page 8. Much of their criticism is

5   similar in content to others, including, for example, Dr. Lundblad, and was addressed

6   earlier in this document

7   FSR and NAMIC summarize their objection to this section by noting that "Mr. Thress

8   thus estimates that *but for* the most recent recession mail volume today would have

9   been greater than mail volume in 2007. This is not plausible." (page 9) It seems,

10   however, that FSR/NAMIC's basis for viewing this as "not plausible" is a misreading of

11   pre-recession history.

12   FSR/NAMIC begins its critique of this by referring to First-Class Single Piece Mail as

13   "the largest grouping by far in 2007". In fact, First-Class Single-Piece Mail volume was

14   lower than First-Class Workshared Mail volume (by almost 12 billion pieces) and

15   Standard Regular Mail volume (by more than 14 billion pieces) in FY 2007.

16   FSR/NAMIC also claims that "First-Class Workshared mail … was essentially flat in

17   2005, 2006, and 2007". On the contrary, First-Class Workshared Mail volume grew a

18   total of 6.8 percent during this time period. It was not flat.

19   Finally, while FSR/NAMIC's statement that "but for the most recent recession mail

20   volume today would have been greater than mail volume in 2007" is technically correct,

21   it should be noted that but for the Great Recession, my model estimates that Market-

22   Dominant mail volume would have been 0.5 percent higher in FY 2012 than in FY 2007.

23   To me, over a five-year period, this seems "essentially flat." Moreover, as I pointed out

24   in my response to POIR No. 6, question 1 and elsewhere, this is a lower percentage

25   growth rate for mail volume than over any five-year period in history since at least 1947.

Public Representative

1. The Public Representative's Estimate of the Impact of the Great Recession

As best as I can understand what they are doing, the Public Representative seeks to separate the effects of the Great Recession which I have quantified into two sub-groups: "exigent circumstances" and "events to which the Postal Service could have responded." They then seek to exclude the latter from the "exigent" impact of the Great Recession.

In their explanation of what they did, the Public Representative made two adjustments to my estimate of the impact of the Great Recession.

2. Macro-Economic Variables

First, they exclude the cyclical component of filtered macro-economic data (Employment, Investment): "The Public Representative maintains that the cyclical component of the HP filter should not be included in the analysis of lost volume. Because the cyclical component of the HP filter represents economic activity to which the Postal Service could have responded, its effect should not be considered an exigent event." (Public Rep Comments at page 25) Interestingly, this is the exact opposite of the conclusion reached by Dr. Lundblad. It is not clear to me why the Public Representative believes that the Postal Service "could have responded" to cyclical factors.

3. Intervention Variables

The Public Representative also attempts to limit the portion of the Intervention variables that are included in the exigent impact of the Great Recession: "The Public Representative maintains that only the initial pulse or shock represents exigent circumstances due to the current recession." The Public Representative alleges that they did this by removing "all values related to the trend, step, and delta in Mr. Thress's

1 intervention analysis". (Public Rep Comments at page 28) There appear to be at least

2 two problems with their suggestion here.

3   First, the argument that the Public Representative is seeking to make is a temporal

4 one: in effect, they argue that **eventually** the Postal Service should be able to adjust to

5 level shifts or changes in long-run trends. But "eventually" does not (and, indeed,

6 cannot) mean "immediately". It's one thing to say that eventually the Postal Service has

7 to compensate and deal with a 9 percent negative trend that has been ongoing for three

8 or four years. It is quite another to suggest that the Postal Service should be able to

9 deal with an unanticipated 9 percent drop in volume the very first quarter that it

10 happens. By excluding all information related to the "trend, step, and delta" parameters

11 in my Intervention variables, they are assuming the latter: that a sudden shift in trend

12 from -5 percent to -9 percent has no exigent component at all and can be dealt with

13 instantaneously, or that a sudden but somewhat gradual level shift of mail volume down

14 20 percent can be immediately recognized and dealt with in a single quarter. This

15 argument simply makes no sense.

16   Second, the Public Representative appears to have made a mistake in their

17 calculations, which resulted in them entirely excluding the impact of all of my

18 Intervention variables. This error results from their misinterpretation of a variable called

19 "Qtrs pre-End". This variable is used on sheet 'Intervention' of Sources-of-

20 ChangeCalcs.xlsx to determine the starting date for my Intervention variables. The

21 Public Representative somehow mistakenly concluded that because this variable had

22 non-zero values prior to 2008Q1 (because, of course, my econometric equations

23 include Intervention variables which start prior to 2008Q1), this variable was calculating

24 all of my Intervention variables to begin prior to 2008Q1 and that I was including the

25 pre-2008 values of these variables in my calculation of the impact of the Great

26 Recession. (Public Rep Comments at page 29) This error on the part of the Public

27 Representative may have been due to an inadvertent mis-labeling of the dates

1   associated with my Interventions starting at row 660 of sheet 'Intervention' of the file

2   POIR.6.Q.14.S-O-C.Calcs.xlsx (which appears to be the spreadsheet which the Public

3   Representative used for its calculations). The dates associated with these cells are

4   correctly identified in the original version of Sources-of-ChangeCalcs.xlsx which was

5   filed in USPS-R2010-4R-10 with this case (starting at row 571 of sheet 'Intervention').

6   Nevertheless, a simple look at, for example, "Intervention 3", associated with

7   Standard Regular Mail (e.g., cells Y515:Y569 of shows that the estimated impact of the

8   Intervention variable in the Standard Regular equation that I allege starts in 2008Q2

9   does, indeed, start in 2008Q2 (cell Y543). But moreover, even if an Intervention

10   variable did start prior to 2008Q1 (as, for example, Interventions 1, 2, and 3 do for First-

11   Class Single-Piece Mail), my decomposition analysis is clearly and unambiguously done

12   on a year-by-year basis. That is, the numbers which I present for FY 2008 are the

13   impact of variables on changes to mail volumes from FY 2007 to FY 2008. Any impacts

14   of Intervention variables prior to FY 2008 are already implicit in FY 2007 volumes and

15   are explicitly ***not*** included in my estimate of the impact of these factors on changes to

16   mail volumes from FY 2007 to FY 2008.

17   **4. Econometric Criticisms of the Public Representative**

18   **a. Appropriateness of Intervention Analysis**

19   The Public Representative argues in footnote 23 on page 29 that the "correct

20   method [of calculating the Exigent Impact of the Great Recession] would rerun Mr.

21   Thress's programs with the correct values and variables, and methods." I think that this

22   is saying that not only was I wrong to count, for example, the cyclical component of

23   employment in the First-Class Workshared Mail equation as being "due to" the Great

24   Recession, but that I was wrong to include this variable in my equation at all.

25   This seems to be conflating two distinct endeavors. The purpose of my econometric

26   equations is to explain changes in mail volumes over time. Clearly, this would have to

27   include an explanation of, for example, recent changes in mail volume trends or the

1   relationship between mail volumes and the business cycle. Having first developed the

2   best equations possible, the next step is to identify which of the factors in the model are

3   "due to" the Great Recession (see, e.g., my response to POIR No. 3, question 2). Even

4   if one wanted to argue that the change in the First-Class Single-Piece Mail trend from -5

5   percent to -9 percent is not an exigent impact of the Great Recession (which, of course,

6   it quite obviously is), to argue that one ought to therefore not account for this at all in an

7   econometric model of First-Class Single-Piece Mail volume simply makes no sense.

8   The result would be a nonsensical equation that completely and utterly failed to explain

9   the very subject of interest here: what the impact was of the Great Recession on First-

10   Class Single-Piece Mail volume.

11   In fact, this very thing was done at the request of the Presiding Officer in response to

12   POIR No. 8, question 3. In that question, I was asked to remove the time trend starting

13   in 2007Q4 from the econometric demand equation for First-Class Single-Piece letters,

14   cards, and flats. As I noted in my response to that request, "there is significant

15   evidence of a negative structural break in the demand for First-Class Single-Piece Mail

16   that takes the form of a negative trend" which was left unaccounted for and, hence,

17   unexplained in this equation, resulting in an increase in the mean-squared error over the

18   past five years (2008Q4 – 2013Q3) from 0.000353 to 0.001407, an increase of

19   approximately 300 percent.

20   **b. Macro-Economic Variables**

21   The Public Representative contends that "Mr. Thress is … inconsistent in his choice

22   of macro-economic variables across products." The Public Representative maintains

23   that "[v]ariables should be consistently measured so that their effect on volume is

24   consistent." (Public Rep Comments at page 25)

25   The problem with that approach, however, is that the effect of the macro-economy

26   on mail volume is __not__ consistent across mail categories. Consider, for example, the

27   impact of the 2001 recession on mail volume. Table A-1 identifies the Postal quarter

1 between 2000Q1 and 2005Q4 with the lowest volume growth over SPLY (same period

2 last year) for various mail categories.

3 **Table A-1**

Mail Category	Lowest Qtrly SPLY, 2000Q1 – 2005Q4
First-Class Single-Piece	2003PQ3
First-Class Workshared	2003PQ2
Standard Commercial	2002PQ2
Standard Bulk Nonprofit	2002PQ1
Periodicals	2002PQ2
Bound Printed Matter	2002PQ3
Media and Library Rate Mail	2001PQ2

4

5   It is, of course, not just mail volumes on which macro-economic effects are not

6 "consistent". The NBER dated the end of the 2001 recession as occurring in December,

7 2001. The unemployment rate, however, rather inconsistently peaked in June, 2003

8 (the same quarter which saw the lowest growth rate associated with First-Class Single-

9 Piece Mail in the preceding table).

10   The goal of econometric analysis is to explain the world as it actually is. To the

11 extent that the effect of the macro-economy on mail volumes is not "consistent", one's

12 choice of macro-economic variables will not be "consistent" either. It will instead be

13 correct.

14   **c. Modeling of Internet Diversion**

15   The Public Representative also raises an econometric criticism of my work that is

16 summarized in their section heading on page 31: "A Proper Analysis of Diversion

17 Requires Explicit Measurement of Internet Diversion". The Public Representative

18 suggests that "measurement of mobile technology and the rise of Internet-based

19 payment methods are two variables that should have been included in Mr. Thress's

20 analysis." They offer no solid evidence as to why these variables "should have been

21 included". In fact, their discussion of "Internet-based payment methods" make it clear

1   that they are talking about "alternative[s] to point of sale charges" (page 34). The Postal

2   Service has never been an option for point of sale charges.

3   The issue of how best to model the diversion of mail to the Internet and other

4   electronic alternatives was addressed in several of my POIR responses (e.g., POIR No.

5   3, question 1; POIR No. 4, question 2; and POIR No. 6, question 25) and was dealt with

6   most extensively in my response to POIR No. 9, question 7. At this point, I think it is

7   probably best to simply let my previous answers stand on this subject.

1   **Greeting Card Association (GCA)**

2   The GCA sponsors the Statement of Dr. James Clifton. The purpose of Dr. Clifton's

3   statement was two-fold:

4

5   (1) To challenge the trend in First-Class Single-Piece Mail which the Postal
6   Service is attributing to the Great Recession, and

7

8   (2) To contend that the own-price elasticities of First-Class Single-Piece and
9   Workshared Mail estimated by the Postal Service in this case are too low and
10   that the true elasticities are much closer to, if not already greater than, one (in
11   absolute value).

12

13   The latter of these issues was dealt with in section II.B. above. Dr. Clifton's first area

14   of concern is addressed here.

15   Dr. Clifton lays out his first critique of the Postal Service's econometric case on page

16   2 of his Statement: "there is essentially no difference in the annual rate of decline of

17   Single-Piece volume caused by Internet diversion between the second and third trends."

18   On page 18 of his Statement, Dr. Clifton presents Figure 4 which plots quarterly

19   First-Class Single-Piece Mail volume from 2001Q1 through 2013Q3. Below this graph,

20   Dr. Clifton asserts that "there is no material difference in the diversion trend for Single-

21   Piece before, during and after the 2008-2009 recession in Figure 4".

22   From FY 2001 through FY 2007, annual First-Class Single-Piece Mail volumes

23   declined by an average of 1.8 billion pieces per year, declining at an average annual

24   rate of 3.7 percent. In FY 2008 and FY 2009, annual First-Class Single-Piece Mail

25   volumes declined by an average of 3.9 billion pieces per year, declining at an average

26   annual rate of 9.9 percent. From FY 2010 through FY 2012, annual First-Class Single-

27   Piece Mail volumes declined by an average of 2.8 billion pieces per year, declining at an

28   average annual rate of 9.2 percent.

1   It is hard to know exactly how to respond to Dr. Clifton here beyond pointing out the

2   obvious: 2.8 billion is greater than 1.8 billion and 9.2 percent is greater than 3.7 percent.

3   Dr. Clifton suggests that the Postal Service had to rely on "manufactured trends"

4   because "such a manufactured trend in Single-Piece was felt to be necessary because

5   of the Postal Service's equitable arguments".

6   Nothing was "manufactured" here. The Postal Service asserts that the negative

7   trend in First-Class Single-Piece Mail volume increased in 2007Q4 because the

8   negative trend in First-Class Single-Piece Mail volume did, in fact, increase.

9   Having apparently been fooled visually by his own Figure 4, Dr. Clifton next attempts

10   to estimate linear time trends over the three trend regimes identified by the Postal

11   Service: 1993Q4 – 2002Q3, 2002Q4 – 2007Q3, and 2007Q4 – 2013Q3. Dr. Clifton

12   does this by separately estimating linear time trends starting in 1993Q4, 2002Q4, and

13   2007Q4, extending each of them through 2013Q3. He then notes that a linear time

14   trend from 2002Q4 – 2013Q3 is not meaningfully different than a linear time trend from

15   2007Q4 – 2013Q3. This is not terribly surprising, since the latter time period makes up

16   over half of the former time period.

17   The proper way to evaluate changes in trends between two time periods is to

18   estimate separate time trends over the two distinct time periods, 2002Q4 – 2007Q3 and

19   2007Q4 – 2013Q3 in this case, and compare the results. Table A-2 corrects Dr.

20   Clifton's Table Five (page 23) in this way. A final row has been added here, logged

21   volume per adult per day, which is the dependent variable used in the Postal Service's

22   econometric demand equation for First-Class Single-Piece Mail.

Table A-2
Slopes of Time Trends for First-Class Single-Piece Mail

	(1) 1993Q4 – 2002Q3	(2) 2002Q4 – 2007Q3	(3) 2007Q4 – 2013Q3	Trend 3 / Trend 2
Raw Volume	-40.40	-110.00	-184.47	1.677
4-Qtr Moving Average	-30.90	-115.63	-197.75	1.710
Volume per Adult per Day	-0.0047	-0.0075	-0.0103	1.368
Logged Vol per Adult per Day	-0.0025	-0.0053	-0.0115	2.161

Contrary to Dr. Clifton's assertion on page 23 of his Statement that there are only "minor variations in the ratio of Trend 3 to Trend 2 slopes", when correctly calculated, Trend 3 is at least 36 percent greater than Trend 2.

Dr. Clifton notes that "the ratio for the Postal Service's multivariate demand equation for Single-Piece is 2.163". What should come as a surprise to nobody who understands how regression analysis works, this is shockingly similar to the ratio in the last row of the above table, 2.161.

Each of the trend coefficients in the Table A-2 has a standard error associated with it. One can use these standard errors to test whether these trends are significantly different. The t-statistic on the difference between Trend 2 and Trend 3 in the last row of Table A-2 is 4.3, meaning that one can have greater than 99 percent confidence that Trend 3 is significantly greater (in absolute value) than Trend 2.

Much of the remainder of this section of Dr. Clifton's Statement (through page 28) is built around his mistaken contention that the negative trend in First-Class Single-Piece Mail volume did not increase in 2007Q4 but was merely "manufactured" the Postal Service.

Starting on page 29 of his Statement, Dr. Clifton expresses consternation over the fact that the trend component of Employment was negative from FY 2002 through FY 2007. The dependent variable in the Postal Service's First-Class Single-Piece Mail demand equation is the natural logarithm of First-Class Single-Piece Mail volume per adult per day. Because the dependent variable in this equation is expressed per adult,

1   the Postal Service also enters the macro-economic variables used in its equations on a

2   per-adult basis. Consistent with this, the Postal Service also constructs the trend

3   component of employment by filtering employment per adult.

4   In the first quarter of the time period which causes Dr. Clifton his consternation,

5   2002Q1, private employment per adult was 0.556. In the final quarter of this time

6   period, 2007Q4, private employment per adult was 0.546. It can hardly be surprising

7   that the impact of employment (per adult) on mail volume (per adult) was negative over

8   a time period where employment (per adult) declined. Nor can it be surprising that the

9   trend in employment over this time period is negative, especially when one considers

10 that employment declined in the years just before and just after this time period.

11   Mail volume per adult is modeled as a function of private employment per adult. To

12 convert from mail volume per adult to total mail volume, then, one multiplies by adult

13 population. The separate effects of these two factors, population and employment per

14 adult, are decomposed in columns C and D of sheet 'Volume' of the Exigent Impact

15 spreadsheet filed with my Further Statement in this case (ExigentImpact.xlsx, filed as

16 part of USPS-R2010-4R-10).

17   In every year from FY 2002 through FY 2007, the positive impact of population on

18 First-Class Single-Piece Letters is greater than the negative impact of employment per

19 adult on First-Class Single-Piece Letters (compare cells C5:C10 and D5:D10), albeit

20 barely so in FY 2007, so that the combined impact of employment and population on

21 mail volume over this time period is to increase First-Class Single-Piece Letters volume

22 by approximately 140 million pieces per year. From FY 2008 through FY 2010, during

23 the heart of the Great Recession, the negative impact of employment per adult

24 exceeded the positive impact of population. This relationship reversed itself by FY

25 2011, when the combined impact of population and employment (per adult) on First-

26 Class Single-Piece Letters volume was very slightly positive (2.4 million pieces, cells

27 C14:D14).

1   There is nothing at all unusual about the relationship between First-Class Single-

2 Piece Mail and Employment within the Postal Service's model.

3   The remainder of Dr. Clifton's Statement dealt with the price elasticity of First-Class

4 Mail and was dealt with in Section II.B. above.

1   **Valpak**

2   Section IV of Valpak's Comments in this case, starting at page 26, is entitled

3   "Witness Thress Has Failed to Provide the Commission with a Reliable Estimate of

4   Volume Losses that Were Due to Either Extraordinary or Exceptional Circumstances."

5   Valpak's critique, which focuses entirely on Standard Mail volume, centers on a

6   basic assumption that it is wrong to attribute more of a loss to the Great Recession than

7   the total decline in mail volume for any specific mail category: "On an aggregate basis,

8   the Thress decomposition analysis blames the 2008-2009 recession for a decline in

9   volume … 25 percent more than the actual decline…. That is a strange conclusion." (p.

10   30)

11   In fact, if one understands (i) what my decomposition analysis is attempting to do,

12   and (ii) the history of Standard Mail volumes, there is nothing at all strange about my

13   conclusion.

14   As I explained in very first POIR response (POIR No. 1, question 1), "[t]he total

15   decline in Standard Mail is the result of the negative impact of the Great Recession

16   combined with the impact of other factors, many of which acted to increase mail volume

17   over that time period." From 1949 through 2007, Standard Mail volume declined year-

18   over-year a total of nine times (out of 59 years, 15.2 percent of the time). At least part

19   of all nine of these years either fell within a recession or was within at least ten months

20   of a recession as defined by the National Bureau of Economic Research (NBER). In the

21   absence of a recession, six decades of experience unanimously suggest that Standard

22   Mail volume would have been expected to increase over the past five years. Yet, even

23   in the absence of the Great Recession, my model projects that Standard Mail volume

24   would have been expected to increase by only 5.6 percent over the five-year period

25   from FY 2007 to FY 2012 in the absence of the Great Recession. Standard Mail

26   volume grew by more than this in FY 2005 alone.

1   From FY 2000, the peak year before the last recession, through FY 2005, five years

2   later, Standard Mail volume increased by 12.2 percent. That is more than twice as

3   much growth as my model would have predicted for FY 2007 to FY 2012. That actual

4   amount of growth in the 2000-2005 period occurred despite including two years of

5   declining Standard Mail volume because of the 2001 recession, the 9/11 terrorist attack,

6   and the Anthrax attack which killed two Postal workers in October, 2001. Less than half

7   the growth seen in a period that featured a recession and two terrorist attacks, one

8   explicitly targeted at the mail, can hardly be characterized as "supremely optimistic" or

9   indicative of a "Great Party" as Valpak has attempted to do here. (Valpak at pages 45-

10   46)

11   Because my decomposition analysis includes both positive and negative factors, it

12   does not really make sense to think about what "percent of the volume decline" is

13   attributed to a specific factor (such as the Great Recession). Just to take one example,

14   for Standard Regular Letters, the change in volume in FY 2008 is decomposed into 13

15   different factors on sheet 'Volume' of ExigentImpact.xlsx (at row 102) (USPS-R2010-

16   4R-10). A total of 9 different factors served to increase Standard Regular Letters

17   volume from FY 2007 to FY 2008 by a total of 6.8 billion pieces while 4 factors

18   combined to reduce Standard Regular Letters volume by 5.5 billion pieces. Just

19   because Standard Regular Letters volume increased overall in FY 2008 does not mean

20   that the negative factors affecting Standard Regular Letters did not really reduce

21   Standard Regular Letters volume; it merely means that Standard Regular Letters

22   volume would have been even greater but for those negative factors.

23   As such, it makes no sense to judge the reasonableness of my numbers by

24   comparing the impact of the Great Recession to the overall change in mail volume. The

25   way to judge the reasonableness of my numbers is to look at what my numbers imply

26   about mail volumes in the absence of the Great Recession and see if they make sense.

1   Valpak analyzes my results for Standard Mail at the CRA level. Table A-3 looks at

2   volume SPLYs for Standard Mail at the CRA level of detail. For FY 2003 through FY

3   2007, the numbers shown here are actual volume SPLYs. For FY 2008 through FY

4   2012, the numbers shown here are my estimates of volume SPLYs in the absence of

5   the Great Recession.

6

7   **Table A-3**
8   **Expected Changes in Standard Mail Volumes**
9   **In the Absence of the Great Recession**
10

	H-D & Sat Letters	H-D & Sat Flats & Parcels	Carrier-Route	Letters	Flats	NFMs & Parcels
2003	-17.4%	3.9%	1.7%	7.7%	1.6%	-10.4%
2004	7.2%	8.6%	-3.1%	9.6%	0.1%	52.8%
2005	12.2%	7.3%	3.9%	6.6%	1.2%	10.0%
2006	15.6%	3.1%	-2.7%	2.2%	-1.4%	4.5%
2007	5.2%	2.5%	-8.3%	5.3%	-7.4%	227.9%
2008	5.5%	1.9%	-20.5%	12.8%	-15.0%	104.0%
2009	0.2%	-1.1%	-5.6%	2.2%	-1.7%	-9.7%
2010	7.5%	-3.2%	-4.5%	5.0%	-4.7%	-19.9%
2011	3.6%	0.4%	-0.8%	5.2%	-1.0%	-1.5%
2012	-1.4%	2.3%	-1.9%	-3.0%	-6.4%	-9.3%

11

12   On page 42 of their Comments, Valpak presents three bullet points that they say

13   "deserve a second mention". (emphasis all in the original)

14

15   • Witness Thress blames the 2008-2009 recession for an astounding **262**
16   **percent of the actual volume decline in Letters**, which constitute over half
17   of all Standard Mail.

18   • In FY 2008, actual volume of Standard Letters increased by just over 2 billion
19   pieces, but witness Thress blames the 2008-2009 recession for a volume
20   **decline of 5 billion** Standard Letters.

21   • Witness Thress concludes that catalogs in the Flats product are **profoundly**
22   **affected** by the 2008-2009 recession, while catalogs in the Carrier Route
23   product are **completely unaffected**.

1   Looking at Table A-3, we see that, in the absence of the Great Recession, Standard

2   Letters volume would have been expected to increase by 12.8 percent in FY 2008

3   which does, indeed, look anomalous. Why would we have expected that? The answer

4   is in the two surrounding columns. In the absence of the Great Recession, we would

5   have expected Carrier-Route volume to decline by 20.5 percent and Standard Flats

6   volume to decline by 15.0 percent with much of those declines shifting to Standard

7   Letters.

8   These shifts were brought about by the implementation of R2006-1 rates in mid-

9   2007Q3. In that case, automation discounts were eliminated for Carrier-Route Letters.

10   Without these discounts, it became cheaper to send the approximately 2 billion

11   Automation Carrier-Route Letters that existed before the implementation of R2006-1

12   rates as Regular Automation 5-Digit Letters. That accounts for nearly 4 percentage

13   points of that expected growth. Also in R2006-1, Standard Flats rates were increased

14   significantly (by more than 20 percent) while Standard Letters rates increased by less

15   than two percent. As discussed in my response to POIR No. 7, question 10.c., this

16   apparently led some mailers to convert some of their flat mailings to letters, a change

17   which explains portions of both the expected 12.8 percent increase in Standard Letters

18   as well as some of the 15.0 percent decline in Standard Flats volume in the same year.

19   Outside of 2008, is there anything unusual about the Standard Letters numbers in

20   the above table? Not particularly: from FY 2003 through FY 2007, Standard Letters

21   volume grew by 2.2 percent to 9.6 percent every year with an average annual growth

22   rate of 6.3 percent. From FY 2009 to FY 2011, Standard Letters volume would have

23   been expected to grow by 2.2 percent, 5.0 percent, and 5.2 percent, if anything, a

24   slightly lower average growth rate than earlier. Outside of FY 2008, by far the most

25   anomalous growth rate for Standard Letters in the above table is FY 2012 when

26   Standard Letters volume would have been expected to decline for the first time in a

27   decade, **even in the absence of the Great Recession**.

1   That explains Valpak's first two bullet points. What about the catalogs (i.e., Flats)?

2   As with Letters, outside of FY 2008, which was explained above, the recent growth

3   rates that could have been expected without the Great Recession are unremarkable

4   and generally within the range of the actual years just before the Great Recession.

5   Moreover, the claim that I have concluded that Carrier Route was "completely

6   unaffected" by the Great Recession is simply wrong, as Valpak itself acknowledges in

7   other parts of its comments.

8   This segues naturally into Valpak's final criticism of my numbers: "The Assumed

9   Scenario from Which Volume Losses are Estimated is Supremely Optimistic and

10   Fundamentally Flawed". (Valpak Comments, Section Heading at page 42) Valpak's

11   argument here is two-fold: (i) "'Normal downturns' cannot be considered 'extraordinary'

12   or 'exceptional' circumstances", and (ii) Witness Thress uses his econometric model to

13   extrapolate the 'Great Party' scenario to the end of 2012." (Valpak Comments at pages

14   43, 46)

15   Valpak suggests "a far more realistic scenario for developing a baseline would have

16   been to assume a recession, albeit one with characteristics similar to, say, an average

17   of the immediately preceding three, four, or five recessions" on the grounds that "[w]ith

18   the advantage of hindsight … it would not be a stretch to assume that the country was

19   ripe for some kind of correction." (Valpak Comments at page 46) Obviously, in

20   retrospect, "the country was ripe for some kind of correction" which is precisely why we

21   saw not just "some kind of correction" but a massive correction that has been dubbed

22   the Great Recession by many analysts. But the question of whether the Great

23   Recession was inevitable in hindsight is irrelevant to the question of what the impact of

24   the Great Recession actually was.

25   As to the unsustainable path of what Valpak calls the "Great Party" in the years

26   leading up to the Great Recession, I would simply note that the largest year-to-year

27   growth in Standard Mail in the 21st century was 5.7 percent in FY 2005. In the 1990s,

1 Standard Mail volume grew by 5.7 percent or more three times, in 1993 (5.7 percent),

2 1997 (6.1 percent), and 1998 (7.2 percent). Overall, from 1990 to 2000, Standard Mail

3 volume grew at an average annual rate of 3.5 percent. For the first half-decade of the

4 21st century (FY 2000 to FY 2005), Standard Mail volume grew at an average annual

5 rate of 2.3 percent. That's not much of a party.

6   Finally, even if one were to compare to a past recession, as I noted above, the last

7 recession was in 2001, so the equivalent of the FY 2007 to FY 2012 time period which I

8 analyzed in this case would be FY 2000 to FY 2005. As I have noted previously in this

9 response, from FY 2000 to FY 2005, Standard Mail volume grew at an average annual

10 rate of 2.3 percent with total growth over those five years of 12.2 percent. Whereas I

11 estimate that, in the absence of the Great Recession, Standard Mail volume would have

12 grown by only 5.6 percent, an average annual rate of only 1.1 percent, less than half the

13 actual growth rate for Standard Mail from FY 2000 to FY 2005 and less than one-third

14 the growth rate for Standard Mail through the 1990s. Thus, I estimate that *absent* a

15 recession – any kind of recession – during the 2007 – 2012 period, Standard Mail

16 volume would have grown at half the pace it grew during the 2000 – 2005 period that

17 *included* a recession (as well as two terrorist attacks, one directed specifically at the

18 mail).

19   My estimate of the impact of the Great Recession on Standard Mail volume is

20 eminently reasonable.